N.a. 8

THE

# NATURAL HISTORY

OF

# NORWAY:

CONTAINING,

A particular and accurate Account of the Temperature of the Air, the different Soils, Waters, Vegetables, Metals, Minerals, Stones, Beaſts, Birds, and Fiſhes; together with the Diſpoſitions, Cuſtoms, and Manner of Living of the Inhabitants: Interſperſed with Phyſiological Notes from eminent Writers, and Tranſactions of Academies.

In TWO PARTS.

Tranſlated from the DANISH ORIGINAL of the

Right Rev^d. ERICH PONTOPPIDAN,
Biſhop of BERGEN in NORWAY, and Member of the Royal Academy of Sciences at COPENHAGEN.

Illuſtrated with COPPER PLATES, and a General Map of NORWAY.

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MDCCLV.

# NATURAL HISTORY

OF

# NORWAY:

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# The AUTHOR'S PREFACE.

THE chief deſign of this preface is, to lay before the reader my motives for attempting a Natural Hiſtory of Norway, together with the opportunities and encouragements which have concurred towards the accompliſhment of my deſign; as ſuch information may, in ſome reſpects, be neceſſary in the peruſal of the work.

My principal motive was, to promote the glory of the Creator, by a contemplation of his works. In the inſtructive book of nature are many leaves, which, hitherto, no mortal has thoroughly peruſed; though the preſent times are bleſt with the happy advantage of all the important diſcoveries made in natural philoſophy, ſince the commencement of this century, which are ſuperior in number and merit to thoſe of many preceding ages. Theſe have been chiefly promoted by the learned Societies now flouriſhing in almoſt every country in Europe, who have liberally encouraged, directed, and excited enquiries into nature, and by the deriodical publications of obſervations, objections, and experiments, have communicated to the world ſuch important truths, as reſulted from them.

It is not my preſent purpoſe to enquire, how theſe diſcoveries have been applied to various ends by perſons of different opinions; I ſhall only obſerve, that devout men have taken occaſion from them to expreſs, in the fulneſs of their hearts, their faith and love to the great Creator, by applying their natural knowledge, to the ſupport and illuſtration of this greateſt of all truths, "There muſt be a God; and he muſt be almighty, omniſcient, and infinite in goodneſs; and though he dwells

dwells in a light inacceſſible to any mortal eye, yet our faculties ſee and diſtinguiſh him clearly in his works". In this reſpect I have the moſt profound veneration for a Boyle, a Nieuventyt, a Fenelon, a Scheuchzer, a Derham, and the like great and excellent perſonages; who having been no leſs conſpicuous in the ſanctity of their lives, than in their mental abilities, will doubtleſs find a place among thoſe, or in preference to many of thoſe, to whom the prophet Daniel promiſes a more exalted degree of glory.

It is true, that the rational part of the heathen world were not unacquainted with the firſt principles of natural religion, and conſequently theſe are of themſelves inſufficient for the immediate and perfect converſion of ſinners, or the attainment of any degree of that ſalvation reſerved for the members of Chriſt's myſtical body, who live in a more ſhining-light, and have more abundant offers of grace. But it is equally true, as the Apoſtle affirms, *he that cometh to God, muſt firſt believe that he is, and that he is a rewarder of thoſe who diligently ſeek him.* A general belief in God, as the creator and preſerver, as the rewarder and avenger, muſt be preſuppoſed, before any faith in the Son of God, the Redeemer, can take place; conſequently the firſt is the baſis of the other articles, and though a miniſter of the Goſpel is not to be lightly carried away by the ſtream, or ought not to follow the crowd of mere philoſophic moraliſts, who purſue vain glory in ſcience, falſly ſo called, and in contradiction to the mind and example of St. Paul, *are almoſt aſhamed of the goſpel of Chriſt, which alone is and will continue to be the power of God unto ſalvation*; yet it becomes them as little to deviate on the other hand, into a diſregard and contempt of natural truths, and of the occaſion which they may draw from them, of promoting the glory of God, among many whoſe taſte and capacity reach no further than ſenſible objects: and not having been found faithful, even in theſe leſſer matters, are not therefore intruſted with greater. *If*, as our Saviour ſays, *we believe not what is ſaid to*

*us of earthly things, how ſhall we believe when he ſpeaks to us of heavenly things?*

I am therefore inclined to think, that neither I nor my brethren tranſgreſs the bounds of our miniſterial office, by inveſtigating and exhibiting natural truths concerning the works of God, which, like his word, are Jehova's. I am rather of opinion, that a ſupercilious neglect of ſuch truths, in this critical age, is one of the cauſes of that contempt, with which the Freethinkers, as they arrogantly ſtile themſelves, look on the miniſterial function.

If phyſical knowlege be not, like godlineſs, *profitable to all things*, yet it is ſo to many, and in a certain degree to moſt things. A civilian, in order to a juſt ſolution of a point in law, muſt previouſly have a competent intelligence of the fact; * and this is not always to be had from a formal depoſition, which is frequently contradicted by others of equal authority; but in many caſes, he may be conſiderably aſſiſted by a perfect inſight into the connexions of nature, which will teach him to reject impoſſibilities, which others would obtrude upon him for certainties, and not to attribute to any cauſe, however plauſibly alledged, what may much more reaſonably be ſuppoſed the effect of ſome other cauſe, though unknown.

The utility, I ſhould ſay the abſolute neceſſity of this ſcience to medicine, needs no tedious proof, the alliance between natural philoſophy and medicine being univerſally known, and the whole materia medica being properly res phyſica. This is ſufficiently confirmed by our eminent phyſicians, Wormius, Bartholin, and Borrichius, who were alſo conſummate naturaliſts. But my more immediate aim, is to repreſent the advantages of natural knowlege to thoſe who apply themſelves to theological ſtudies, with a view of directing others in the way to ſalvation. The firſt knowlege requiſite in them, is the knowlege of human nature; for grace and nature are the two great objects, which it is incumbent

* See an ingenious piece in the Hamburg magazine, under the title of Arguments on the uſefulneſs of natural philoſophy in the ſtudy of the law, Vol. IV. p. 27.

upon them to diſtinguiſh on all occaſions, when they undertake a cure of ſouls. In the next place, they muſt learn to know God from his other great works, which proclaim his being, and attributes, as well as from his wiſe and tender œconomy in the government of all his creatures. If they ſhould prove unacquainted with this branch of knowlege, then they are more ignorant than even the heathens, according to the teſtimony of St. Paul himſelf, which is accompliſhed by the writings of Pagans. How admirably among others *, Derham, and Nieuwentyt †, have applied natural philoſophy to an unanſwerable confirmation of revealed truths, is well known to thoſe who have peruſed their excellent works with attention, and have from ſuch peruſal, either acquired their firſt belief and love of God, or found thoſe religious habits greatly ſtrengthened and animated. Moreover, a religious man, whoſe profeſſion turns his attention to other ſecular ſciences, muſt confeſs, that the delight of natural enquiries is greatly heightened to him, by an advantage which at firſt he did not expect, by the confirmation of his belief, and thus he is encouraged to purſue his reſearches, by the repeated ſatisfaction with which they are attended. Not to mention the occaſion which a naturaliſt may take from his ſcience, to remind himſelf and others of their duty towards God and their neighbour, and this agreeably to the method of the prophets, and the example of the great prophet Jeſus himſelf, who referred thoſe who are intemperately ſollicitous about worldly things, to the fowls of the air, and the lillies of the field; the diſobedient to the oxen, and aſſes, which know their maſter; the ſlothful to the induſtrious pattern of the ant;

* Particularly in his phyſico theology, or a demonſtration of the being and attributes of God, from the works of creation, being the ſubſtance of ſixteen ſermons preached at the lectures founded by the honourable Robert Boyle.

† In that learned and devout work, the religious philoſopher, or a right uſe of the ſtudy of nature to the conviction of atheiſts and infidels. This conviction ſhould be an eſpecial incentive to further reſearches; as, without the leaſt hypocriſy, I can ſay of myſelf, that the γνωσὸν τὸ Θεὸ the knowlege of the eternal, inviſible Being, who is the ſcope and ſpirit of all the truths delivered by the prophets and apoſtles, and the εἶναι ἄνδρας ἀνα πολογήτους, by which others alſo may be gained, not only irreſiſtibly drew me into the ſtudy of natural hiſtory, but ſweetens all the labours with which it ſeems to be attended, and enlivens the converſation of perſons of the ſame taſte, Henkels Pyrilologie, or hiſtory of fire, Cap. v. p. 300.

and

and the negligent to the bird which knoweth its ſeaſon. Thus the works of God ſerve for a baſis and confirmation of natural theology, even as revealed truths are grounded in his word; and this hath induced ſome able men of our times to follow Derham's excellent plan, whoſe phyſics, and aſtro-theology were no ſooner publiſhed, than others adopted the ſyſtem; every one was ſtirred up to apply his particular knowlege to the diſcuſſion of ſome point of natural hiſtory, and exhibit ſuch an account of it, as ſhould tend moſt to ſpread the knowlege and glory of the Creator. Theſe endeavours by no means deſerve to be conſidered as unneceſſary or ſuperfluous, for all who are deſirous of a more intimate acquaintance with the works of God, as arguments of his exiſtence and attribues, have no time, or opportunity for that circumſtantial examination of every part, which hath been undertaken and executed by Fabricius, in his pyro- and hydro-theology; Alvard, in his bronto-theology; Zornius, in his pitano-theology; Rathleff, in his acrido-theology; Leſſer, in his litho- and teſtaceo-theology, &c.

I heartily join with the celebrated Linnæus * in wiſhing, that even thoſe gentlemen in the univerſities, who are not peculiarly deſtined to phyſic, or the like, but to the ſtudy and promulgation of the word of God, in ſome miniſterial office, were directed to apply ſuch a part of their academic years to phyſics, as may equal, if not exceed the time ſpent in metaphyſics, and logic, theſe laſt not being ſo indiſpenſably neceſſary and uſeful as the former, eſpecially to thoſe who are called to attend a country pariſh. Here their natural knowlege will not only furniſh them with many clear arguments, and edifying reflexions to themſelves and their

* Monſieur Linnæus commence par une harangue, que lui dicte la vivacité de ſon inclination, pour l' hiſtoire naturelle. Il s'attache à la felicité des peuples, dès qu'elle a été portée à un certain degré de perfection. Il s'addreſſe aux puiſſances, et les ſupplie d'introduire une ſcience auſſi utile dans les univerſités. On y enſeigne la logique, la metaphyſique et d'autres ſciences de theorie, dont l'utilité eſt extremement éloigneé du bien public, pendant qu'on ne devroit pas negliger l' hiſtoire naturelle, qui enrichit une nation, parce qu'elle lui fait connoitre ſes richeſſes. Il ſouhaiteroit ſurtout que les jeunes gens, qui ſe deſtinent à la vie eccléſiaſtique, puſſent ſe procurer une teinture de cette aimable ſcience. Elle leur adouciroit la ſolitude de la campagne, et elle leur feroit faire des découvertes, que les ſavans des villes ne ſont pas à même de faire, Biblioth. Raiſonnée, Tom. XXXVIII. p. 15.

hearers,

hearers, of which we have inſtances in many religious books of that kind; but it will beſides prove a liberal amuſement in their ſolitude; it will enable them, by much greater opportunities than the learned enjoy in towns, to make uſeful diſcoveries or improvements, from the products of nature, to the laſting benefit of their country, which it is their duty to promote. I ſhall mention only one thing, which here in Norway might be of the greateſt importance, I mean ſuch ſkill in metallurgy, as to know the ſpecies of ores and minerals, to make little experiments by fuſion, and thus to form a judgment of the intrinſic value of a mine, and how far it will anſwer the expence of opening. He who is poſſeſſed of ſuperior knowlege and penetration, may in this country, ever meet with many latent things, which might long ſince have occaſioned much thought and reflexion, had they been exhibited earlier to public view and examination.

This leads me to my other motive, for attempting a natural hiſtory of Norway, which carried me thro' it with infinite delight, though I wanted the materials, the time, and the opportunities requiſite for an eſſay of this kind. In the annual viſitations of my dioceſe, which lead me into every part of this province, and ſometimes form a journey of an hundred Norway miles, I have heard authentic accounts of natural things, and ſometimes have ſeen the originals themſelves, which being unknown to me, put me upon enquiring whether they were ſo to others, or whether they had a perfect knowlege of them? The latter being ſeldom the caſe, it was natural to wiſh the improvement of that knowlege, eſpecially as thoſe mountainous countries are diſtinguiſhed from others by containing many things, which are met with in the province of Dauphiné in France. I refer the reader to the ninth volume of the Memoires de l' academie royale des inſcriptions et belles lettres, where he will find the following paſſage; " Nature has beſtowed on every province ſome diſtinguiſhing advantage, and the curioſities of each country are proportioned to the number and nature of the alterations it has undergone. Con-

quently, in provinces full of mountains, rocks, grottos, ſubterraneous cavities, and minerals, the ſpeculative mind is entertained with many ſuch natural phenomena, as are not to be found in other parts.

This obſervation of M. Lancellot, is entirely applicable to Norway, and more eſpecially to that part where providence has been pleaſed to ſettle me, which, according to its name, almoſt wholly conſiſts of mountains, in which, few parts of Europe can be compared to it, and conſequently, according to the above obſervation, few contain more remarkable naturalia. Even Norwegians themſelves, who reſort hither from the other provinces, imagine themſelves in a foreign country, not only on account of the continual high mountains they meet with; but in reſpect of the different and very unwholſom air iſſuing from off the ſea and ſettling between the mountains, from whence it cannot eaſily be diſſipated.

But Norway, conſidered in general, in the ſingularia naturæ et providentiæ, ſurpaſſes moſt countries, and not only in its inanimate treaſures, ſuch as metals, minerals, and vegetables, but in the various kinds of beaſts, birds, and fiſhes; and particularly of the laſt, ſcarce any parts of the univerſe afford ſuch a diverſity and abundance. But theſe ſuperior advantages are not eſtimated as ſuch by the inhabitants, who daily enjoy, and therefore are too apt to diſregard them. Foreigners ſeldom viſit us, unleſs they are ſeamen and merchants; and theſe have little elſe in view, than the lucre of their profeſſions. Northward of us the people are too unpoliſhed to encourage a traveller to take the tour of the country, which hath been the means of clearing up the natural hiſtory of other countries.

On this very account it ſeems the more expedient, that ſuch of our Daniſh nobility, and of our literary youth, who travel at a very great expence to viſit foreign countries, ſhould be firſt obliged to take, at leaſt, a half year's tour through this kingdom, which is ſo cloſely united with Denmark. If the travels of

theſe young gentlemen are ſaid to be undertaken upon worthy motives, I hope their principal object is to qualify themſelves the better for the ſervice of their king and country, in thoſe public employments which at their return they ſollicit, and to which they have ſome claim. Now if this be their object, it is more neceſſary for them to viſit Norway and Sweden, than all the other countries of Europe. An acquaintance with the latter (Sweden) both in reſpect to its ſtrength and its weakneſs, is unqueſtionably more neceſſary to our young ſtateſmen, than to be able to decide which merits the preference, the Rheniſh, Italian, French, or Spaniſh wines. As to the neceſſity of an accurate knowlege of Norway, I believe it muſt be immediately manifeſt, if not to others, at leaſt, to a Norwegian, when he ſees a perſon filling ſome eminent poſt either in the ſtate, or in the law, with irreproachable integrity, who is totally ignorant of the particular circumſtances and properties of Norway, and wherein they totally differ from thoſe of Denmark. Thus the public, contrary to his intentions, may ſuffer great detriment, or many things be neglected, which would be happily executed, if his public ſpirited views were directed by his own diſcernment, which would enable him without ſeeing thro' the eyes of other men, throughly to ſift and examine the grounds and conſequences of a matter, which now becomes doubly difficult, it being not only foreign to him, but very remote perhaps from the purpoſe, to which he is meditating to apply it.

In this reſpect, I flatter myſelf, this firſt eſſay towards a natural hiſtory of Norway, will have its uſe with ſome, who never had an opportunity of perſonally viſiting a country, with which, by virtue of their office, they are in a greater or leſs degree, perpetually concerned.

This work, moreover, with all its imperfections, may ſerve to enrich natural hiſtory in general with ſome particulars, of which, conſummate naturaliſts were heretofore the only competent judges. I am very far from deſiring to relate, or eſtabliſh marvel-

lous

lous things, merely to excite the admiration of the reader. On the contrary, I have endeavoured to rectify the erroneous idea which many, even among the learned, have, for want of better information, formed of ſeveral, in themſelves very wonderful natural phænomena, here in Norway; ſuch as a bottomleſs ſea-abyſs growing in the Moſkoe-ſtrom, penetrating quite thro' the globe; of ducks growing on trees; of a water on Sundmoer, which in a ſhort time turns wood into ſtone; and many other ſuch things, which, ſome who have had no opportunity of enquiring further, or others who were not diſpoſed to it, have received as undoubted facts. The reader will meet with many ſtrange, ſingular, and unexpected things here, but all of them ſtrictly true; ſome of them not diſcovered before, others confirmed; and, to the beſt of my ability, in ſome meaſure accounted for, and illuſtrated.

Perhaps, Norwegians by birth, to whom the nature of their country is better known, may, from their own particular experience in divers parts, produce ſomething more complete and extenſive. If they ſhould be animated thereto by this work of mine, I ſhall account it among the accidental advantages which may reſult from it; and in this caſe, let no one imagine that a difference of opinion, decently delivered, will give me any offence, or trouble; the diſcovery of truth, is in this and every other reſpect, my chief end; and I live in an age, which not content with mere hypotheſes, unſupported by proofs, requires that every fact or poſition, which is advanced as real, be at leaſt demonſtrated poſſible, and conſonant to the nature of the things in queſtion.

Phyſics, having never been my chief ſtudy*, I am far from the arrogance of ſuppoſing, that I have always hit upon the true original cauſe, and laid open the connexion of every ſubject; and I am much farther from the preſumptuous conceit, that I have, in

* Si mihi homini vehementer occupato ſtomachum moveritis, triduo me juris-conſultum profitebor. Cicero in Orat. pro Muræna, cap. XXVIII.

every particular, developed the abſtruſe meaſures, and diſcovered the ſecret deſigns of the infinite Creator, whoſe ways are paſt finding out. I hold with Bartholin. "Officio ſuo ſatisfecit phyſicus, ubi rationes adduxit probabiles." It is not in one reſpect only that our Saviour's words hold good; *the wind bloweth where it liſteth, and thou heareſt the ſound thereof, but thou knoweſt not from whence it cometh nor whither it goeth.* And the wiſe man does not exaggerate when he ſays, *we ſcarce perceive what lies upon the earth, or feel what is betwixt our hands.* However, our almighty and all-wiſe Creator cannot be diſpleaſed at an inveſtigation of his works, with a pious and reſpectful docility, nor at the praiſes we give to his holy name for ſo much as falls within the extent of our faculties; reſting aſſured, that what is beyond our reach in this ſtate of probation, will be explained to us in that new heaven and new earth which we look for according to his promiſe.

I ſhall now, purſuant to my promiſe, give ſome account of the ſources from whence I have drawn what is here offered to the public. Theſe are partly writings relating to Norway, partly my own certain experience, as far as it extended, and partly the obſervations of ſome intelligent perſons, communicated to me at my deſire.

In the firſt claſs are our noted hiſtorians and chorographers, eſpecially Peter Nicholas Undalin, formerly ſuperintendant over the diſtrict of Liſter, miniſter of Undal, in the dioceſe of Chriſtianſand, and a canon of the chapter of Stavenger, who, beſides his tranſlation of Snorre Sturleſen's annals, from the old Norwegian tongue into modern Daniſh, wrote a poſthumous work, publiſhed at Copenhagen, in quarto, in the year 1632, intitled, A True Deſcription of Norway and the adjacent Iſlands. Of this piece Dr. Chriſtopher Steinkuhl, in 1685, publiſhed a German tranſlation with additions. It gives a tolerable account of the extent of every province in general, its ſubdiviſion, and the names of the diſtricts and pariſhes; with ſome particulars on the nature and

qualities of the ſoil; but theſe are but few in number, it not having been his deſign to treat expreſsly of them. Mr. Jonas Ramus, heretofore paſtor to the community of Norderhong in Rongerige, in the dioceſe of Aggerhuus, goes further. This writer, beſides many other theological and hiſtorical compoſitions, has deſerved highly of his country for his Deſcription of Norway, publiſhed in quarto, at Copenhagen 1715. It is a chorographical improvement upon Undalinus's work, but having the ſame point in view with that author, he confines himſelf within the ſame limits, yet is fuller on the nature and products of the country, adding, particularly at the cloſe, from page 240 to 274, an appendix, enumerating the ſeveral beaſts, inſects, birds, fiſhes, herbs and trees. This conſiſts indeed of little more than the bare names of them, but was of uſe however to me, as it opened a large field for further enquiry. Arendt Berendſen's Fertility of Denmark and Norway, printed in quarto at Copenhagen, in 1656, is a book which exhibits a clear account of the different fertility of the reſpective provinces, and ſeveral particulars concerning the products of the country; but this again proceeds no farther than giving the names of things *. In ſome certain points, I have been moſt indebted to Mr. Lucas Debes's Feroa Reſerata, or Deſcription of the Ferro Iſlands, publiſhed at Copenhagen, in octavo, 1673. This gentleman, who was formerly ſuperintendent of Ferro, was, for the times he lived in, and the opportunities he had, a good naturaliſt, and, as the iſlands he deſcribes, lying parallel to the weſtern coaſts of Norway, have ſome analogy with them, eſpecially on account of the ſea-fiſh and water-fowls, his obſervations were of greater aſſiſtance to me than any other work. I have likewiſe gleaned ſome good materials from diſtinct treatiſes on ſingle ſubjects, ſuch as Wormius's Tractatus de mure Norvegico, Dethardingii Diſſ. de vermibus in Norvegia qui novi viſi, Gartner's Hor-

* The Norrigra Illuſtrata of Jens Lauridſen Wolf, hardly deſerves to be ranked among the chorographies of the country, it containing little of any importance but what is hiſtorical.

ticulturas Norvegica, Lochſtor's Diſſ. de Medicamentis Norvegiæ ſufficientibus, Daſſe's Deſcription of Nordland, &c.

The loſs of the manuſcript hiſtory of the beaſts of Norway, by the above-mentioned Mr. Peter Nicholas Undal, is exceedingly to be lamented; it happened in this manner. The author had tranſmitted his work to his intimate friend Dr. Worm, that before it was committed to the preſs, it might undergo the reviſal of that conſummate naturaliſt †. With him it remained till his death, when it fell into the hands of Dr. Thomas Bartholin, who carried it to his ſeat at Hageſted in Silland, where, together with many other valuable books and manuſcripts, it was unfortunately burnt. Undal, page 83 of his Chorography, mentions another book, called Speculum Regale, to which he appeals for what is ſaid concerning a hazle ſtick being petrified in Birkedal moraſs, in Sundmoer, from whence I conclude, this book muſt have turned upon natural hiſtory; but as probably it was likewiſe a manuſcript, it was a great pity that the public was not benefited by it, before it was loſt, as is unqueſtionably the caſe. But a greater calamity to the literary world, was the conflagration which happened 1734, in the city of Chriſtianſand, which deſtroyed that invaluable aſſortment of collections for a natural hiſtory of Norway, in which Mr. Jens Spidberg, an eccleſiaſtic of great eminence there, had with indefatigable application ſpent many years. He was a man conſummately accompliſhed for ſo great an undertaking, as appears from the other monuments extant of his genius, which diſplay a ſingular penetration and judgment, with an infinite compaſs of learning, eſpecially in phyſics and mathematics. I ſhall here quote a paſſage from a letter, with which he favoured me, dated Dec. 10, 1750, concerning his deſign, which he relinquiſhed after the unfortunate loſs of his manuſcripts and library. I ſhould not have troubled the reader

† This, however, from the following mention made of it, by the ſaid Mr. Worm, does not appear to have been a comprehenſive or finiſhed work: Petri Undalini fragmenta hiſtoriæ animalium Norv. MSS. quæ penes me ſunt. Tr. de Mure Norveg. page 3.

with this extract, but it contains ſome things relative to my preſent purpoſe.

" It is to be lamented that hitherto no perſon has ventured to undertake a natural hiſtory of Norway; for I am perſuaded that no country in the univerſe affords more curioſities and wonders, out of the three kingdoms, of nature, than this; and conſequently, there is not a ſubject more fit for the pen of a naturaliſt. Had M. Maupertius gone as far as to Wardehuus, or to the north-cape, and there made his diſpoſitions for taking the figure of the earth, his calculations would have been attended with leſs difficulty, and more certitude than at Tornea. Had M. de Mairan taken care to procure from Norway, ſome accurate obſervations on the Aurora Borealis, his valuable Traité Phyſique de l'Aurore Boreale, had been much more complete and deciſive; for the north light takes its riſe from Norway, and particularly from the dioceſe of Drontheim. Conſiderable additions might have been made to Redi, Swammerdam, and even to M. Reaumur's Memoires des inſectes, had they had the advantage of a communicative, and obſerving correſpondent in Norway, where are ſeveral tribes unknown either in Italy, Holland, or France. Linnæus, by his obſervations in Sweden, has enriched botany more than Tournefort, by all the remarks he made in France, or in his travels to the Levant. I need only mention the article of metallurgy, in which Norway ſurpaſſes all other countries, producing all kinds of minerals and metals, from gold, to ſulphur and lead. In like manner I paſs over the numberleſs beaſts, birds, and fiſhes peculiar to Norway; the rivers, hot ſprings, meteors, and the ſeveral alterations of the air, &c. but alas! all theſe things, ſuch is the incogitancy and ignorance of the people, are ſtill almoſt unknown; at leaſt, I have not yet heard of any one equal to the taſk, who has attempted to place them in a proper light. Peter Nicholas Undal, to whom we owe a tranſlation of Snorre Sturleſeus, and a civil hiſtory of Norway, had, it ſeems, alſo compoſed a natural hiſtory, but it being ſent to Copenhagen for approbation, was ſuppreſſed,

or

or at leaſt not publiſhed; though a phyſical treatiſe written 130 years ago, would little ſute the taſte of theſe more enlightened times. The great Wormius in his Muſæum, and Tho. Bartholin in his acta medica, and hiſtorica anatom. rariora, have, I know, introduced ſome of the curioſities of Norway, but their accounts are defective. Jonas Ramus was diſtinguiſhed by a knowlege of the hiſtory and antiquities of his country, but was not eminent as a naturaliſt. About five or ſix years ago, Count Reuſs, who was then governor here, ordered all the litterati in theſe parts to ſend in an account of every particular in their reſpective countries which might contribute to the melioration of the ſoil, or the improvement of agriculture. Some ſuch memorials were delivered in; but of what uſe they were, or whether any meaſures were taken in conſequence of them, I have not heard. It may be preſumed that the like orders were iſſued in the other dioceſes. Mathematics, and natural philoſophy have always been my favourite ſtudies, and in my late library I was poſſeſſed of moſt and the beſt phyſical writings publiſhed in Italy, France, Germany, and England. It was Scheuchzer's Natural Hiſtory of Switzerland, that firſt induced me to undertake a work of the ſame kind on Norway; and I had an opportunity of perſonally making the beſt collections and obſervations for that purpoſe, being ordered by baron Lowendahl, who commanded in chief in Norway during the laſt war, to draw a map of the country, and frontiers betwixt Norway and Sweden; a copy of which, I am informed, is in the Collegium Curioſum at Copenhagen. This undertaking gave me an opportunity of travelling thro' the dioceſe of Chriſtianſand, and of obſerving all the rivers, lakes, mountains, and every thing relative to natural hiſtory; but afterwards, whilſt I was employing my leiſure in augmenting and digeſting my collections, in order for publication, that deplorable fire which happened in Chriſtianſand 1734, deprived me, beſides 6000 volumes in all languages and ſcience, of all my collections and manuſcripts, ſo that my whole ſtock was reduced to what I had treaſured up in my memory,

mory, and I have ſince acquired by ſubſequent obſervations. I had before publiſhed two little pieces, one in Holland, de cauſa et origine ventorum, the other at Hall in Saxony, of the North-light. I can ſtill amuſe myſelf, with the entertainment I receive in my leiſure hours, from books of Mathematics, and natural philoſopy." So far M. Spidberg.

It is therefore a melancholy conſideration, that ſo few having made any advances towards a natural hiſtory of Norway, their collections ſhould be thus deſtroyed; which, from ſeveral cauſes, has been the fate of many excellent writings among us. Concerning the neglect of natural hiſtory, or the great ſcarcity of ſuch writings in the northern countries, the learned Muller, in his Iſagoge ad Hiſt. Cherſoneſ. Ambricæ, cap. XI. p. 10. thus expreſſes himſelf: "Hiſtoriæ chorographicæ cognata eſt naturalis, quæ licet infinita rerum ἀξιοθαυμάστων varietate in regionibus hiſce luxuriet, et curioſorum calamos atque ingenia provocet, pauci tamen hactenus partem illius aliquam illuſtrandam ſibi ſumpſerunt." This likewiſe is the complaint of Dr. Henry Lochſtor, whoſe death in the maturity of life, and in the midſt of many uſeful deſigns, was a public loſs; in his diſſertation De Medicamentis Norvegiæ ſufficientibus, p. 20, he ſays, "Monendum duxi, haud deeſſe Norvegiæ fontes medicatos, deeſſe autem, qui horum vires et principia inquirant ſolertes naturalium rerum ſtudioſos." If we conſider the natural cauſe of this, it will not appear matter of complaint, tho' the effect is ſo in a great degree. In a country ſo healthy as Norway, a few phyſicians will ſuffice, and conſequently, there are few who devote themſelves to phyſical reſearches.

From theſe ſeveral circumſtances it will be eaſy to conclude, that I had not a multiplicity of ſources from whence to draw many choice materials. The diſcoveries which I have been able myſelf to make, either by my own experience, or enquiries, or experiments, have furniſhed my principal aids. My annual viſitations, as has been intimated before, gave me the beſt opportu-

nities, and great encouragement. Almoſt every inn in this extenſive dioceſe, gratified my curioſity, and yet this is not the only province known to me from my own experience. The dioceſe of Drontheim is the only one I have never been in, the others I have travelled through, and in ſeveral places in that of Aggerhuus made ſome ſtay, and always took care to find out a perſon, who was able to ſatisfy me in any queſtions concerning the nature and circumſtances of the country. But the dioceſe of Bergen, as will be eaſily imagined, is the country of which I have had the moſt perfect knowlege, both from experience and information. Theſe circuits uſually take up two or three months, and leaving me more vacant time than I could wiſh, I uſually, according to the proverb, make a virtue of neceſſity, by ſpending part of the time in converſation with the guides and drivers, appointed at different ſtations to attend upon me with carriages. Their anſwers to my ſeveral queſtions, I afterwards examine with the miniſters of the pariſhes, or ſome other perſon well acquainted with the country, and whatever I hear confirmed by ſeveral teſtimonies, or not controverted, or doubted of, I enter among my miſcellaneous obſervations, and, at my return home, compare them with the deſcriptions of ſuch countries, eſpecially the mountainous, or which are in any other reſpect analogous to Norway. Theſe annual tours I have alſo improved towards making a ſmall collection of naturalia of Norway, ſuch as ſtones, ores, foſſils, ſea-trees, corals, ſnails, muſcles, uncommon birds, fiſhes, and the like; of the moſt remarkable of which, for the gratification of the reader, I have cauſed prints to be annexed.

Laſtly, on the ſubject of the Norway-birds, and more particularly the fiſh, I have had recourſe to the obſervations of men whoſe dwellings and employments give them opportunities of examining more minutely things, which do but ſeldom fall under general obſervation. As to fiſh and marine-animals, a greater variety, and ſtranger tribes are ſeen hereabouts, and off Nordland, than in any part of Europe; but a ſuperſtition which prevails among

among the lower claſs of people, deprives us of moſt of theſe, for, when they happen to catch a fiſh of a ſtrange, ſingular figure, conſequently the greater ſubject of curioſity, they are ſure immediately to throw it over-board; to thoſe of the monſtrous ſpecies the peaſants give the general appellation of trold, devil, or trold-fiſh, devil-fiſh, and are weak enough to imagine, that unleſs it be immediately ſet at liberty, their fiſhing will be unſucceſsful, and ſomething or other amiſs will certainly befall them.

I have now, delivered what I principally intended in this preface, I ſhall only repeat the before-mentioned declaration, that I do not ſend this eſſay abroad as a maſter-piece, and ſhall rejoice to ſee it improved by more intereſting articles, and more refined obſervations; and to ſee a complete ſuperſtructure raiſed on this foundation, by perſons of more leiſure and opportunity.

However, I own myſelf entirely in the ſentiments of a very eminent writer on the like occaſion, who, in his firſt eſſay of a natural hiſtory of Hungary, aſſerts the claim of an original writer to the indulgence of the public, in the following words; "Res omnino remotas è ſua, ut ita dicam, barbarie primus exemi; propterea veniam mereri videor mihi, ſi nec omnia eruerim, nec omnia correctè .... ſentio ineſſe multa quæ corrigi, deeſſe quæ valeant ſuppleri *". Had I not judged this work to ſtand in need, or to admit of any amendment, I ſhould not ſo frequently have called it an eſſay in this preface; but it is, indeed, the firſt eſſay on this ſubject, and of courſe encumbered with difficulties too great for the application and talents of one man; and on this ground, I hope that every candid judge, who knows how little leiſure my indiſpenſible functions leave me, will not require more, or a more perfect work of this kind from one, who may appear to have performed more than could be expected, who has denied himſelf many hours of natural repoſe, if not ſuffered

* Aloyſius Comes Marſilli in Danub. Panon. Myſic. Tom. 1. Præfat.

by his aſſiduity in other reſpects *, but this I ſhall never regret, if, in any meaſure, I can contribute to promote the glory of God, and the public welfare.

Bergen, May 1. 1751.

* Qui multa agit, ſæpe fortunæ poteſtatem ſui facit, quam tutiſſimum eſt rarò experiri. Seneca de Tranquillit. Anim. Cap. XIII.

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THE

THE

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An accurate MAP of the KINGDOM of NORWAY, containing 5 general Governments or Dioceses, Viz.t Aggerhuys Bergen Drontheim, Wardhuys, and Bahus.
By John Baptist Homman, Corrected by Martin Hubner, Professor of History at the University at Copenhagen.
The Northern Part of Norway reduced to a lesser Scale, containing Finmarch, or the Government of Wardhuys
A Scale of Miles.
Common Norway Miles 10 to a Degree
German and Danish Miles 15 to a Degree
Large French Leagues or an hours journey
English Miles 60 to a Degree
Chief Cities of Province
Lesser Cities
Great Towns
Small Towns
Villages
Archbishops see
Bishops See
N.B. The Kingdom of Norway is subject to the King of Denmark but the Government of Babus was Yielded to the Swedes by the Treaty of Roschild in 1658, as was also a part of Drontheim called Herndal by the Treaty of Copenhagen in 1660.
North
South
West
East
OCEANUS SEPTENTRIONALIS
MARE ALBUM
MOSCOVIÆ PARS
HERNDA
DRONTHE PRÆFECT
NORVEGIA
SUECIA
DRONTHEM
Leerstrand
Singe
Meldal
STRONDEN
Sule Field
OPDAEL
Rud Field
SUNDAEL
Dofre Field
SUNDMOERLAND
Stadt
BERGEN
SUDFIORD
NOORDFIORD
HORDLAND
Findaals
Carmen
Hekle Field
Bugle Field
Iogle Field
DALERNE
Christiansand
Listerland
Lindesnes
CHRISTIANIA Olim Anslo Opslo
Aggerhus Slot
SALTSBERG
FREDERIKSTAT
Fredrickshall
Stromstatt
Hamer
Berga
Tolmenschow Silva
VERMELAND
GOTHIA
Wener Lacus
Dalebors
BAHUS
GOTTENBORG
T SCHAGER RACK
OCEANUS

30
31
32
33
34
66
65
64
NOORDBUGDEN
NORVEGIA
LAPPO
NIA
Areskuta
Bedstaat
Steenkeer
Snaassen
HERN
Spaboe
Vardal
SUE
Scongen
DALIA
Egge
Stukelska
Laevanger
Maratse
Field
Frosten
Scoerdaal
Stene
Blinde
DRONTHEM
Hommelwyk
Manlwyk
SCOER
Markvelt
Moestia
Leerstrand
Meilhuys
Zaghe
Statsbugden
Schoonfons
Lmeroe
Frosten
Ponteroy
Geving
Sollou

THE

# NATURAL HISTORY

OF

# *NORWAY.*

## PART I.

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## CHAPTER I.

### Of the Air and its Phenomena.

SECT. I. *Of the climate of* Norway, *and diverſity of the atmoſphere in general.* SECT. II. *Of the day-light and length thereof.* SECT. III. *Of the* aurora borealis, *and ſea-light, in the night.* SECT. IV. *The winter very mild and ſeldom ſevere, or laſting, on the weſt ſide.* SECT. V. *The wiſe and bountiful deſign of providence in this.* SECT. VI. *Natural cauſe of it.* SECT. VII. *The winter moſt ſevere in the eaſtern parts.* SECT. VIII. *Cautions and preſervatives againſt it.* SECT. IX. *Violent heats in ſummer, and their cauſes.* SECT. X. *Falſe notions of foreigners concerning the air of* Norway. SECT. XI. *The property of that air with reſpect to health and ſickneſs.* SECT. XII. *Rains, and a humid air, on the weſt ſide.* SECT. XIII. *Advantages ariſing from thence agreeably to the deſigns of the Creator.* SECT. XIV. *Difference of weather in countries contiguous to each other.* SECT. XV. *Deep ſnows, eſpecially on the mountains, together with the advantages and detriment thereof.* SECT. XVI. *Regular and irregular winds.*

### SECT. I.

THE air, together with the light, warmth, humidity, and other properties thereof, varies much more in Norway than in moſt European countries. This may well be concluded, without perſonal experience, from the vaſt extent of the country, of 300 Norway-miles * from cape Lindeſnaes ſouth,

The climate, and various atmoſphere of *Norway.*

* The common miles of Norway are computed to be about one fourth larger than a German mile, at which rate they are near equal to five or ſix meaſured Engliſh miles.

to the north cape on the borders of Ruſſia. Thus M. Ramus, ſo juſtly celebrated for his hiſtory of the civil tranſactions and antiquities of his country, in the Chorographical deſcription of Norway, computes its length from Lindeſnaes in the dioceſe of Chriſtianſand, which lies in 58, or, more preciſely, in 57 degrees, 47 minutes latitude, to the north cape at the extremity of Finmark, at 71 degrees and half, to be in a direct line, or through the air, 202 miles and a half, but he finds that the circuit acroſs the mountains and vallies, or by water, from one cape to the other, increaſes it to above 300 miles, and its breadth from the frontiers of Sweden weſtward, to cape Statt near Sundmoer, in 21 degrees of longitude from the Canaries, is 65 miles, but from thence, the country becomes gradually narrower towards the north. I have no particular knowlege of that part of Norway called Finmark, which lies in the frigid zone, or near the polar circle. It is the country of Norway, properly ſo called, at the extremity of the temperate zone, that is here to be chiefly treated of, and it is the air of this country, which I affirm to vary conſiderably in reſpect of the degrees of heat and cold, light and darkneſs.

## SECT. II.

Day-light and length of the day.

In this and moſt other points, I ſhall chiefly regulate my obſervations by the horizon of Bergen, not only as it happens to be the place of my reſidence, but as its latitude, being 61 degrees 15 minutes, with reſpect to north and ſouth, lies nearly in the middle of Norway * properly ſo called. The longeſt day at Bergen conſiſts of 19 hours, the ſun riſing at half an hour paſt two, and ſetting at half an hour after nine; and the ſhorteſt is only ſix, the Sun not riſing before nine, and ſetting at three.

The gradations of the increaſe and decreaſe of day-light, are clearly exhibited in the following table.

* At Bergen in Norway, Gefle in Sweden, Nyſtad in Finland, and Wyburg in Carelia; as being at parallel diſtances from the equator, the days and nights are of the ſame length. But at Bergen it is noon at the very ſame inſtant, as at Utrecht in Holland, Marſeilles in France, and Conſtantine in Africa.

The

The rising and setting of the Sun in the horizon of Bergen, in the 61st degree of latitude, according to Pontanus.

| January. | | | February. | | | March. | | | April. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sun rises | Sun sets | | Sun rises | Sun sets | | Sun rises | Sun sets | | Sun rises | Sun sets |
| 1 | 8 ¾ | 3 ¼ | 4 | 7 ½ | 4 ½ | 2 | 6 ½ | 5 ½ | 5 | 4 ¾ | 7 ¼ |
| 11 | 8 ½ | 3 ½ | 10 | 7 ¼ | 4 ¾ | 6 | 6 ¼ | 5 ¾ | 11 | 4 ½ | 7 ½ |
| 20 | 8 ¼ | 3 ¾ | 14 | 7 | 5 | 11 | 6 | 6 | 16 | 4 ¼ | 7 ¾ |
| 25 | 8 | 4 | 19 | 6 ¾ | 5 ¼ | 16 | 5 ¾ | 6 ¼ | 21 | 4 | 8 |
| 30 | 7 ¾ | 4 ¼ | | | | 21 | 5 ½ | 6 ½ | 26 | 3 ¾ | 8 ¼ |
| | | | | | | 26 | 5 ¼ | 6 ¾ | | | |
| | | | | | | 31 | 5 | 7 | | | |

| May. | | | June. | | | July. | | | Auguſt. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sun rises | Sun sets | | Sun rises | Sun sets | | Sun rises | Sun sets | | Sun rises | Sun sets |
| 1 | 3 ½ | 8 ½ | 2 | 2 ½ | 9 ½ | 4 | 2 ¾ | 9 ¼ | 4 | 4 ¼ | 7 ¾ |
| 7 | 3 ¼ | 8 ¾ | 7 | 2 ¼ | 9 ¼ | 9 | 3 | 9 | 6 | 4 ½ | 7 ½ |
| 12 | 3 | 9 | 13 | 2 ½ | 9 ½ | 14 | 3 ¼ | 8 ¾ | 14 | 4 ¾ | 7 ¼ |
| 22 | 2 ¾ | 9 ¼ | 18 | 2 ¼ | 9 ½ | 19 | 3 ½ | 8 ½ | 19 | 5 | 7 |
| 28 | 2 ½ | 9 ½ | 23 | 2 ¼ | 9 ½ | 24 | 3 ¾ | 8 ¼ | 25 | 5 ¼ | 6 ¾ |
| | | | | | | 29 | 4 | 8 | 31 | 5 ½ | 6 ½ |

| September. | | | October. | | | November. | | | December. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sun rises | Sun sets | | Sun rises | Sun sets | | Sun rises | Sun sets | | Sun rises | Sun sets |
| 4 | 5 ¾ | 6 ¼ | 4 | 6 ¾ | 5 ¼ | 5 | 8 ¼ | 3 ¾ | 6 | 9 ¼ | 2 ¾ |
| 14 | 6 | 6 | 9 | 7 | 5 | 11 | 8 ½ | 3 ½ | 12 | 9 ½ | 2 ¾ |
| 19 | 6 ¼ | 5 ¾ | 14 | 7 ¼ | 4 ¾ | 17 | 8 ¾ | 3 ¼ | 17 | 9 ¼ | 2 ¾ |
| 24 | 6 ½ | 5 ½ | 20 | 7 ½ | 4 ½ | 28 | 9 | 3 | 22 | 9 | 3 |
| | | | 25 | 7 ¾ | 4 ¼ | | | | | | |
| | | | 31 | 8 | 4 | | | | | | |

A particular herein observable, is, that as in the beginning of the year the day-light increases with remarkable celerity, so it decreases at the approach of winter in a like proportion. In the middle of February, I have been able to read without difficulty at six in the morning, which at the same hour in October was not possible; the cause of this, being manifestly the inclination of the earth towards the poles, needs no further explanation.

Clearness of the summer nights.

In the summer nights the horizon, when unclouded, is so clear and luminous, that at midnight one may read, write, and do every kind of work as in the day; this I have often experienced, even when age had brought me to the use of spectacles. Christian V. during his stay at Drontheim, in June, 1685, used to sup at midnight, without the use of lights. In the district of Tromsen, which is properly the extremity of Norway, towards the islands of Finmark, the sun is continually in view in the midst of summer, and is observed to circulate day and night round the north pole, contracting its orbit, and then gradually enlarging it, till at length

it

it leaves the horizon, ſo that in the depth of winter it is inviſible for ſome weeks *, and all the light perceived at noon is a faint glimmering of about an hour and half's continuance, which, as the ſun never appears above the horizon, chiefly proceeds from the reflection of the rays on the higheſt mountains, the ſummits of which are ſeen more clearly than other objects. However, this glimmering is not the only light with which the inhabitants of theſe northern provinces are provided for their fiſheries, and other employments, in the open air. The wiſe and bountiful creator hath afforded them all poſſible aſſiſtance, for theſe and other purpoſes. Beſides the moon-ſhine, which by reflection from the mountains, is exceedingly bright in the valleys and creeks, theſe northern people, as well as the peaſants, and fiſhermen in the dioceſe of Bergen, when their day-light is contracted to ſix hours, find conſiderable relief from the north-light called Aurora borealis; it often affording them all the light neceſſary to their ordinary labors, eſpecially as it is now both here and elſewhere more frequent and extenſive than formerly.

## SECT. III.

The *Aurora borealis*, and ſea-light in the night.

This light in the air †, which here, and in Sweden, is known by the name of Værlios, Lyſnar, Lyſanigar, and Lottetſkien, is elſewhere generally called the north-light, as uſually iſſuing from the north, and its appearance moſtly known to the northern people, although the real cauſe of it be here, no leſs than in other parts, a very dark problem, and involved in many uncertainties. I ſhall the leſs preſume to advance any thing as certain and deciſive on this head, ſince counſellor Ramus, a native of Norway, and a celebrated mathematician, hath not ventured to

* Even in theſe provinces, where, I have already obſerved the ſhorteſt day to conſiſt of ſix hours, there are alſo ſome few parts ſo incloſed within the ſteep mountains, that for ſeveral months they cannot ſee the ſun's diſk, though its beams are viſible to them. As I paſſed in my viſitation through the iſland of Laerdahl, the maſter of the houſe where I lodged, aſſured me, that he, and his next neighbour, were bleſſed with the ſun's appearance, not more than four months of the whole year, namely, from the middle of April, to the middle of Auguſt, yet others, at the diſtance of but a quarter of a mile, where the valley widens, could ſee it as uſual. This muſt be the condition of ſome of the inhabitants of the Alps, eſpecially about Monte Cenis, which ſeparates Savoy from Piedmont, where, in ſome valleys, though the ſun does not appear during the whole winter, yet the inhabitants enjoy the neceſſary day-light.

† In England, and eſpecially in the north parts, where the north light is alſo well known, it is by reaſon of its deſultory motion, called Morrice-dancers, Merry dancers, and ſtreamers.

account for it, and nothing of this kind is found even in the Acta Societatis Hafnienſis, T. I. N°. IX. and T. III. N°. VI. where it might moſt naturally be expected, as theſe pieces contain hiſtorical and phyſical accounts of this very light, with ſeveral plates, repreſenting the obſervations made in many parts of Europe, on the various figures of the northern lights. In the year 1741, the ſon of Capt. Heitman, another great naturaliſt of Norway, publiſhed a poſthumous piece of his father's, on the heat of the ſun, &c. and likewiſe on the north-light. His ſyſtem of the means and manner by which the ſun influences our earth, and the other planets, at ſuch an immenſe diſtance, through the æthereal expanſe, is certainly very ingenious, but I am cautious of ſubſcribing to it, as it oppoſes the doctrines of Newton, Wolfius, Reinbeck, and other eminent mathematicians; yet his thoughts on the north-light, as he was both a perſon of great erudition and experience in philoſophy, deſerve to be here inſerted along with other conjectures, eſpecially as he there treats of another phænomenon analogous to it, namely, a ſea-light, or a luminous appearance in the water, called by the Norwegians, Moor-Ild. His ſentiments on both theſe ſubjects are as follows: " Thus it is obſerved in the frigid zone, that the force which gives motion to the high winds, is there at its utmoſt height; inſomuch, that ſometimes the lower region of the air, which is filled with nitrous vapours, is whirled round, and then is formed that light in the air called the Aurora borealis, or north-light: yet this is a light void of heat, and of the ſame nature with that light which the people of Norway call Moor-Ild, and takes its riſe nearly from the ſame cauſe as the Moor-Ild, the latter proceeding from an agitation of the ſalt-water in a dark night, which hath been every year obſerved by the herring-fiſhermen, when towing their nets along in a calm; for the ſea appears in a kind of flame, as far as the nets reach, whereas before the motion of the nets, not the leaſt glimpſe of light was diſcernible. In freſh-water lakes, there is no ſuch flame apparent; it being formed by the ſaline particles, which upon a motion of the ſea begin to ſparkle, and cauſe an effulgence *. The ſame has been likewiſe obſerved in

* This ſparkling fire in the ſea, ſhall be treated of more at large in chap. 3. ſect. 8. when we come to treat of the ſea, to which it properly relates.

navigation: for as in a dark, calm night, the courſe of a fiſh is perceivable by a long and increaſing track of light upon the water, ſo the water, behind a ſhip under ſail, appears luminous to a conſiderable diſtance.

It is not at all times, however, that this igneous effulgence is to be ſeen in the ſea; but it frequently happens at an approaching alteration of the weather, and on the change of the winds to ſouth-weſt, when the ſaline particles of the ſea are thrown into a kind of fermentation. In like manner, the northern-lights do not always appear, but only at particular ſeaſons, when the ſaline corpuſcles of the air are agitated by a natural fermentation. But the proper rationale of this fermentation, and aſcent of the ſaline particles of the ſea and air, is beſt known to naturaliſts, whoſe reſearches turn on things of this nature. However, it is a general obſervation among expert northern navigators, and the fiſhermen who live along the coaſt of Norway, that when the north-light moſtly appears to the weſtward, it is a prognoſtic of a ſouth-weſt wind; which confirms the opinion of the naturaliſts, that ſome regions of the air, as well as of the ſea, abound in ſaline corpuſcles more than others, and theſe, at certain times, create a ferment, and diffuſe a light through the air. Although this moſt frequently preſages the above-mentioned change of weather, yet, there is often a conſiderable interval, before the change actually takes place. It is however certain, that the cold regions of the air contribute greatly to the change and boiſterouſneſs of the weather; particularly when the north-light has a copper-tinge, a violent ſtorm, at weſt and north-weſt, may be certainly expected, though the weather may for a week after continue favorable to navigators, before the ſtorm comes on. Of this I have ſeen many inſtances.

In this fermentation of the air the cold is abated, and if it extends ſo far as to rarify the air of the atmoſphere, this is called mild weather: And when, by the elevation of the inferior air, it is the more compreſſed againſt that region, which is ſaturated with nitrous exhalations, ſo that the wind in the inferior air ſets the lower part of the cold region in ſome motion, this cauſes thoſe corruſcations in the air, which are called the north-light. In thoſe years, when the winter is unuſually ſevere, theſe nor-

thern lights are ſeldom or ever ſeen; the air being too far oppreſſed and condenſed by the intenſneſs of the cold, to force itſelf upwards againſt the nitrous region, and communicate to it that motion which produces the north-light, before the lower air again expands itſelf by freſh fermentations."

Thus far M. Heitman, whoſe obſervations in ſome meaſure confirm the general opinion of its being a kind of fulgur brutum, or lightning without thunder; conſiſting, as lightning generally does, of inflamed ſulphureous particles, but burning with much leſs vehemence. Dr. Nicholas Boerner, in his Phyſics, chap. xi. p. 284. is expreſsly of this opinion, viz. "that the north-light is nothing but ſaline, ſulphureous vapours, kindled in the upper air, by a change it undergoes in autumn, ſpring, and at other times, when the ſun has not power ſufficient to rarify and diſperſe theſe ſulphureous particles." Or, to make uſe of the words of the celebrated Wolfius, "it is a ſubſtance as yet immature for lightning; of which he treats in a particular diſſertation; or, an imperfect tempeſt, as he calls it in ſect. 335, of his rational Reflections on the works of nature." This opinion may be further corroborated by the following circumſtance: Some perſons of credit, who live in this country, have aſſured me, that theſe Fulgura ſpuria, are not always without a crack or ſound, for in a glaring north-light, and calm weather, a diſtinct ſound has been heard, with an exploſion in the air, like the ſudden breaking of the ice. Another opinion concerning the north-light, is, that it is no more than a mere refraction, or reflection of a flame iſſuing from certain vulcanoes, which, in favour of this conjecture, are ſuppoſed to lie beyond Greenland, near the north-pole. But this poſition is too weak to build any thing on, or to be generally admitted. There are many, however, who conſider the northern lights only as a mere reflection, or reverberation, tho' not from the flame of any vulcanoes, but from the ſun itſelf, when far below our horizon it meets with ſome evaporating clouds, at ſuch a height as to be within the contact of the ſun's beams in their aſcent.

This is the opinion, for which Dr. Ventſky of Prentſlau declares in his third publication of Miſcellaneous Obſervations, drawn from the celebrated M. Euler's enquiry into the north-light,

light, which is to be found in the ſecond part of the Hiſtoire de l' Academie. This hypotheſis requires the following concurrence of cauſes; firſt, there muſt be vapours in the upper regions of the air; next, ſome clouds of that ſort, and theſe at a vaſt height, and in the north; and they muſt not only emit vapours, but be illuminated and irradiated by the ſun, when it is inviſible to us; and of conſequence, the ſun muſt be viſible to us at ſuch time, if we ſtood as far above the horizon as the ſaid clouds. And laſtly, there muſt be a north-wind in the ſame upper region of the air to ſet it in motion, and to give a diſpoſition to the figures, which ſo ſuddenly change their appearance. It is poſſible, that the experience of poſterity may ſuggeſt ſomething more probable.

The author's opinion concerning the north-light.

If I may be allowed, or expected, to add any opinion of my own on this problematical ſubject; it may perhaps be not more improbable than what hath been already alleged, if we admit, that the original cauſe of the north-light lies in the electricity of the etherial air; and, conſequently, that it has exiſted at all times, and in all places, tho' not viſible to us, without a concurrence of ſuch concurrent circumſtances and junctures, as I ſhall here exhibit. It is not above twenty years, ſince the electrical experiments have become generally known, and as they have excited the attention of all lovers of natural knowlege, they have likewiſe filled them with hopes, that this diſcovery would open a way to the ſolution of many more myſteries in nature. I flatter myſelf with the ſame expectation; but the firſt experiment of any importance, which has occurred to me, relates to this very point of deducing the north-light from the electrical, feeble, and ſubtile fire of the air, which by means of the more rapid circumvolution of the globe on its poles, or axis, excites a more vehement concuſſion, or agitation, in the air of the northern climates, and thus diſplays the electricity of the ethereal air moſt conſpicuouſly in thoſe parts. I was firſt led into theſe reflections ſometime ſince by a converſation with a friend of mine, a very ingenious naturaliſt, who ſhewed me a remarkable paſſage in the Bibliotheque Britannique, Tom. XXI. P. II. pag. 336. where, among other extracts from the Engliſh Philoſophical Tranſactions, is part of a piece of M. Deſaguliers, intitled, A Diſſertation

tion concerning electricity. The ſcope of his demonſtrations is ſomething different, viz. to ſhew the true cauſe of the aſcent of rain-water, and the power by which it remains floating in the air, which is at all times much lighter than water. But as the inveſtigation of one truth often proves introductory to another, ſo in this paſſage the writer ſeems to direct us to a clearer inſight into the origin and nature of the north-light. I ſhall therefore inſert ſo much of that paſſage here, as relates to our purpoſe. In order to apprehend his meaning, we muſt recollect with the learned writer, that Mr. Du Fay's obſervation, "that there are two ſorts of electricity," is proved by obſervations and experiments; and that the electrical bodies of a vitreous electricity mutually repel one another, whilſt they attract thoſe of a reſinous electricity; alſo that thoſe of a reſinous electricity repel one another, and attract thoſe of a vitreous electricity.

"I ſuppoſe, ſays Dr. Deſaguliers, particles of pure air to be electric bodies always in a ſtate of electricity, and that vitreous electricity.

1ſt, Becauſe particles of air repel one another without touching, as has been deduced from experiments and obſervations.

2dly, Becauſe when the air is dry, the glaſs-tube rubb'd (or only warmed) throws out its effluvia, which the air drives back to the tube; from whence they dart out anew, and ſo move backwards and forwards with a vibratory motion, which continues their electricity.

3dly, Becauſe the feather made electric by the tube, and darted from it, keeps its electricity a long time in dry air; whereas when the air is moiſt, the moiſt particles, which are non-electrics, floating in the air, and being attracted by the feather, adhere to it, and ſoon make it loſe its electricity; which alſo happens even to the tube in a little time.

From this conſideration it will be eaſy to account for a famous experiment of the late Mr. Haukſbee, which is this:

Having pump'd out all the air from a glaſs-globe, he caus'd it to turn on its axis very ſwiftly by means of a rope with a wheel and pulley; then rubbing the glaſs with his hand during its motion, there appear'd a great deal of light of a purple colour within the globe, without any light or attraction obſerv'd on the outſide of the glaſs, which is obſerv'd when the air has not been pump'd

out. Then turning the cock ſo as to re-admit the air gently into the globe during its motion, the light was broken and interrupted, diminiſhing gradually, till at laſt it appeared only on the outſide of the glaſs, where it was accompanied with attraction. Does it not appear that the external air, by its electricity, at firſt drives back the electric effluvia of the glaſs, which go then to the inſide of the globe, where there is the leaſt reſiſtance? For we obſerve that as the air comes in, it repels the electric effluvia, that go inwards no longer when all the air is come in. If the fact be ſo, as the experiment ſhews, is not my conjecture proved, viz. that the air is electrical?

In the reverend and learned Dr. Hales's Vegetable Statics, ſeveral of his experiments ſhew, that air is abſorbed, and loſes its elaſticity by the mixture of ſulphureous vapours, ſo that four quarts of air in a glaſs-veſſel will, by the mixture of thoſe effluvia, be reduced to three. Will not this phænomenon be explained by the different electricity of ſulphur and air? The effluvia of ſulphur, being electric, repel one another: and the particles of air, being alſo electric, do likewiſe repel each other. But the air being an electric of a vitreous electricity, and ſulphur of a reſinous electricity, the particles of air attract thoſe of ſulphur, and the Moleculæ compounded of them, becoming non-electric, loſe their repulſive force."

The judicious reader may, of himſelf, apply this paſſage to the north-light; and perhaps, by a mature diſcuſſion of it, ſtrike out clearer ideas of that phænomenon, than I can develop, who only undertake to ſet down a few things, which have occurred to me.

The terreſtrial globe, together with its atmoſphere, may be conſidered as the glaſs-globe of the electrical machine. Upon the air being exhauſted, and the globe whirled about with velocity, there appears within it a purple flame, and this is the colour of the north-light; now this flame muſt be the æther igneus. Upon the re-admiſſion of the circumambient air, eſpecially if thick and damp, the acid or æthereal fire within is expelled, and hovers for ſome time on the upper ſurface of the glaſs, till, mingling with the air, it is diſſipated, and extinguiſhed. Now this ſeems to intimate to us, that the north-light obſerved towards the pole or axis of our earth, does not only owe its origin to the æther, but is the very æther itſelf; which, being aggregated, gives way to the

the impreſſion of the humid air, and mounts and floats above the clouds, whoſe motion likewiſe renders it variable. Whilſt the air is dry, whether by the froſts of winter, or the heats of ſummer, no north-light is to be ſeen. But upon the weather's beginning to break, either by a thaw after a ſharp froſt, or by rains after heat, and when theſe are preceded by damp exhalations, the north-light breaks forth, as a certain prognoſtic of the change. For theſe exhalations have then nearly the ſame effect in the atmoſphere, as the aforementioned intruſion of the air into the glaſs-globe; propelling upwards the lighter æthereal air, when for a time it appears like the purple coloured fluid iſſuing from the glaſs-globe, till it is diſſipated, or mixed again with the ambient air. It is further obſervable, that the air near the poles is far more denſe, and compreſſes more vehemently, as being repelled with leſs violence, than that in the middle of the globe, where the centrifugal power operates with a more direct and immediate force *.

Should this hypotheſis, as indeed I know of no better, be approved by ſuperior naturaliſts, it will afford a very ready ſolution of a difficulty, which clogs all other ſyſtems; namely, It is well known among thoſe people of the north, who have the beſt opportunities of obſerving theſe lights in the air, that the general region of them is not due north, but rather in the north-weſt quarter of the ſky. Is it aſked how this comes to paſs? it may be anſwered, that as the ignorant imagine the ſun daily to run from eaſt to weſt, the more intelligent know, that, on the contrary, the earth daily revolves from weſt to eaſt; thereby on one ſide a rarefaction may be cauſed in the air, and on the other a condenſation. It is likewiſe obſervable and conſonant to this, that from ſun-ſet to a little paſt midnight, the Aurora borealis is ſtrongeſt, and to the beſt of my knowlege not towards the morning. Let others who have more ſagacity, inveſtigate this matter farther.

I muſt aſk the reader's pardon for dwelling ſo long on this particular, though I am not without apology, ſince it appertains

* In locis polaribus vis centrifuga nihil de gravitate aeris tollit, cum in eam ſub Æquatore directione perpendiculari agat. Quamobrem pondus atmoſpheræ ſupra æquatorem debebit apparere minimum, prope polos maximum; quemadmodumobſervationes baroscopicæ quoque evincunt. Petr. van Muſchenbroek, Elementa Phyſicæ, Sect. 1116.

to the phenomena of Norway, and of the north in general, and theſe are more immediately my ſubject, than natural philoſophy in general; which, however, I flatter myſelf, may, in ſome reſpects derive ſome benefit from this work.

I cannot forbear adding, that the northern peaſant, tho' he does not arrogantly pretend to inform us, what the Aurora borealis is, yet he is not ſo ſtupid as to imagine it to be ſome tremendous portent of wars, the deaths of princes, and other direful events, which has been the interpretation of thoſe lights, even till modern times, when they have been ſeen in France, Spain, and Italy, and been made uſe of to circulate a general terror and anxiety, very ſeldom as the omen of any happy event. Yet a ſignal inſtance of the latter happened even in Norway, and no longer ago than the middle of the laſt century; which, among other things ſhews, the north-light formerly not to have been ſo very uſual even here, or not ſo well known. But one extraordinary circumſtance is, that the perſon who interpreted this light as an omen, was a profeſſor of phyſics and mathematics, who, in the middle of the laſt century, was firmly perſuaded of having ſeen an apparition, which probably was no other than the north-light; and this apparition revealed to him the important and happy revolution, which, within three years after happened in this kingdom, when the government was changed into an independent hereditary monarchy *.

* The authority to which I can appeal for this, is in J. H. Feuſtking's Gynæceum Hæret. Fanat. p. m. 658. in theſe words: "A few years ſince died here in Kemberg, in his 92d year, our learned and experienced phyſician Ambroſe Rhodes, who, whilſt profeſſor of natural philoſophy and mathematics, at Chriſtiana in Norway, predicted from the appearances which were obſerved at Eger in Norway on the 1ſt of Auguſt, 1657, that Frederic III. who was then on the throne of Denmark, would be inveſted with an unlimited ſovereignty, and that the kingdom before elective, would be thus made hereditary. An account of his thoughts and inferences from this phænomenon, he drew up in writing at the preſſing requeſt of Jens Bilkens, chancellor of the kingdom. I muſt own that ſome particulars in it are very aſtoniſhing, and appear ſo even to the celebrated C. S. Schurtzfleiſch, who in his Latin letters (which are very well worth reading) mentions it in the following manner. "Memorabile eſt in vicino oppido Kembergenſi, medici et mathematici non inglorii judicium de oſtento quodam in Norvegia viſo, unde præſagivit Regi Daniæ Friderico III. plenam et hæreditariam poteſtatem, quod eventus An. 1660, approbavit."

SECT.

## SECT. IV.

The winter mild in the weſtern parts, and the froſt ſeldom ſevere or laſting.

From the light, which is the firſt object of perception in the air, I proceed to its heat and cold. The degrees of theſe, as already obſerved, are very various; and this not only from the annual viciſſitudes of the ſeaſons, but in the very ſame ſeaſon, and on the ſame day, the variableneſs is greater than ſtrangers can well conceive to be poſſible. I ſhall the rather enlarge on this remarkable phænomenon, as it is a manifeſt argument of the power and wiſdom of the Creator, and his tender care of his creatures *. On the eaſt-ſide of Norway, or from the frontiers of Sweden to Filefield, that is in moſt of the provinces, the winter's cold generally ſets in about the middle of October, laſting till the middle of April, or, according to the computation of the peaſants, from Calixtus's day to that of Tiburtus, when the air is here as cold as at the extremity of the temperate zone. The waters are frozen to a thick ice, and the mountains and valleys covered with ſnow. I ſhall hereafter produce ſome inſtances of the extreme intenſeneſs of the cold. However, this is of ſuch importance to the welfare of the country, that, in a mild winter, the peaſants, who live among the mountains, are conſiderable ſufferers; for, without this ſevere froſt and ſnow, they can neither convey the timber they have felled, to the river, nor carry their corn, butter, firs, and other commodities, in their ſledges, to market-towns, and after the ſale of them, carry back the neceſſaries they are there ſupplied with. I muſt here mention a wonderful inſtance of the divine œconomy, which I ſhould heſitate to commit to writing, did not thouſands of witneſſes confirm it: when the

* According to the common opinion, and even the poſition of Ptolemy's Geogr. cap. viii. countries equally diſtant from, or equally near to, the line, ſhould have equal cold and heat. But that this is not the caſe is proved by Profeſſor Kaeſtner in his Explanation of Dr. Halley's method of calculating heat, Hamburg Magazine, tom. iii. p. 426; but none of the inſtances adduced by him are ſo clear as what might have been brought from the natural ſtate of Norway, had he been acquainted with it. The true cauſe of the want of heat, in the northern countries, is the vicinity of that part of the globe to the pole; the ſolar rays there falling more obliquely and, conſequently, not acting with ſuch force as near the line, where they fall in more perpendicular directions. The other cauſe, moſt current among the ignorant, namely, the greater diſtance of the ſun, can occaſion no great difference, if we conſider the vaſt diſtance of the ſun from the earth, conſiſting of ſo many millions of miles; for this being conſidered two hundred miles, more or leſs, cannot be ſuppoſed to affect us, at leaſt not in any degree; eſpecially as we know, that the ſun is fartheſt from the earth in the heighth of ſummer, and neareſt it about Chriſtmas; but it then deſcends ſo very low, that, from the obliquity of its rays, it gives little or no heat.

winter rages with ſuch ſeverity in the eaſt parts of Norway, that all the freſh-waters are frozen, the lakes and bays are open on the weſt-ſide, though lying in a direct line with the eaſtern parts; the air is miſty and cloudy, and the froſts ſeldom are known to laſt a fortnight or three weeks. In the center of Germany, which is two hundred leagues nearer the line, the winters are, generally, more ſevere, and the froſts ſharper than in the dioceſe of Bergen, where the inhabitants often wonder to read in the public papers, of froſt and ſnow in Poland and Germany, at a time when no ſuch weather is felt here. The harbours of Amſterdam, Hamburg, Copenhagen, and Lübeck, are frozen ten times oftener than ours; for, with us, it is generally known not to happen above two or three times in a whole century; and, which is yet more extraordinary, when the harbour of Bergen is frozen, the Seine, at Paris, may be concluded to be in the ſame condition. Thus our winter at Bergen is ſo very moderate, that the ſeas are always open to the fiſhermen and mariners; and it is ſeldom that the bays and creeks are froze over, except thoſe that reach far up the country towards Filefield, where they meet with keen and dry north-eaſt winds, blowing from the land *. In the other parts, towards the weſtern coaſt, it is but ſeldom, as has been before noticed, that any hard winters, or laſting froſts, are heard of, though travellers, who perhaps come from, or beyond, Filefield, about 20 miles eaſtward, ſay, they have had ſevere winters there for ſome time paſt.

## SECT. V.

The wiſe and bountiful deſign of providence in this.

This amazing difference is, according to the wiſe deſign of the creator, requiſite for the well-being of the country; for, as I have already obſerved, the eaſtern parts require a hard winter for their ſubſiſtence, and a mild winter, and open weather is no leſs neceſſary to the weſtern parts, where the inhabitants chiefly main-

* As far as the 80th, or 82d degree, the north-ſea continues open and navigable both winter and ſummer, except in the creeks, and along the ſhore, in Finmark, Iceland, and Greenland, from whence the large maſſes of ice being detached, are ſeen to float in the ſea. In winters of extraordinary ſeverity, when the Baltic is frozen up, the ſwans, which otherwiſe are not to be claſſed among the birds of this country, tranſmigrate hither, to procure themſelves water, which they are there deprived of; and I have been credibly informed, that the few ſwans, which are ſtill to be ſeen at Syndfiord, and other places within my dioceſe, were refugees from Denmark, in the years 1708 and 1740.

tain themſelves by their ſea-fiſheries. It is expedient for them, that the ſea ſhould be open during the whole winter; for from the middle of January, the herrings, skates, cods, &c. are chaſed by the whales towards the coaſt, when the peaſants ſally out in multitudes from the creeks, into the ſea, and thus get a great part of their ſubſiſtance for the whole year; and ſeveral thouſands of the northern peaſants of both ſexes, during January and February, paſs the whole day upon the open ſea, and only towards the approach of night betake themſelves to their huts, in the neighbouring iſlands. This mildneſs of the winter is likewiſe neceſſary for curing and ſalting the fiſh, which in froſty weather would be ſpoiled and uſeleſs: for if the fiſh ſhould freeze as ſoon as taken out of the water, the ſalt could not penetrate into them, being obſtructed by the ice; and if carried home and kept till a thaw comes on, they ſoon become flaccid and putrified at the bone, and conſequently unfit for uſe; a ſufficient evidence of the abſolute neceſſity, and great benefit of a mild winter, to the weſtern parts of Norway.

Winter-fiſhery.

## SECT. VI.

If it be farther asked, how is it poſſible that nature can regulate herſelf by the neceſſities of the inhabitants, and give them froſts and thaws at the ſame time, under the ſame climate; I anſwer, that it is no miracle, but purely the reſult of the primary natural diſpoſition of things. It is a general rule, that Norway, from its ſituation on the globe, muſt have ſevere winters; but the exception from this rule lies here; the weſtern ſide of Norway lying neareſt to the great ocean, its air muſt be ſenſibly milder, the intenſe froſt being warded off by the conſtant intermixture of warm exhalations, vapours, and miſts from the ſea, which in the lower region of the air, inſenſibly diſſolve the almoſt imperceptible ſharp particles of ice that proceed from the north pole, or congeal in the cold upper regions of the air, but are melted as ſoon as they fall in with the warm vapours of the ſea. That theſe exhalations abate the natural rigour of the weather, cannot be doubted; but whether they ariſe from warm ſprings at the bottom of the ſea, continually boiling by means of the centrial fire; or if this be denied, whether this ebullition be the effect of leſſer ſubterraneous

The natural cauſe thereof.

vulcanoes reſembling the mountainous ones on the ſurface of the earth, it would not be pertinent here to determine.

Woodward's Theory of the earth, p. 39, and 52.

Without entering into a prolix examination of theſe things, I ſhall only quote Woodward's opinion on this head, " There is a nearly uniform and conſtant heat diſſeminated throughout the body of the earth, and eſpecially the interior parts of it; the bottoms of the deeper mines being very ſultry, and the ſtones and ores there very ſenſibly hot, even in winter and the colder ſeaſons; and 'tis this heat which evaporates and elevates the water of the abyſs, buoying it up indifferently on every ſide, and towards all parts of the globe." And, page 151, he adds, " That the water reſident in the abyſs, is, in all parts of it, endued with a conſiderable quantity of heat; and more eſpecially in thoſe parts where theſe extraordinary aggregations of his fire happen. So likewiſe is the water which is thus forced out of it, inſomuch that when thrown forth and mixed with the waters of wells, of ſprings, of rivers, and of the ſea, it renders them very ſenſibly hot." Thus far Woodward.

It is ſufficient that experience ſhews the countries remote from the ſea, tho' neareſt to the line, to be ſubject to the hardeſt winters; and that among thoſe countries which are actually encompaſſed by the ſea, none have leſs of the winter, that is of the froſt, ice, and ſnow thereof, than thoſe which lie open to the great ſea, or the main ocean, the mild and warm effects of its exhalations being moſtly felt in winter, when they are moſt copious, having a large range in the atmoſphere, which at that ſeaſon is leſs crowded by the ſolar rays. It is almoſt inconceivable, tho' certainly true, that the winter of the year 1708, ſo remarkable for its deſtructive ſeverity, was not remarkably different at Bergen from the other common winters. And ſo likewiſe Ireland, Scotland, and the Orkneys, all ſituated towards the weſtern ocean, felt little of the extraordinary rigor of that winter; of which more particular accounts may be read in the Engliſh philoſophical

* To remove all doubts, which thoſe who are not experimentally acquainted with this ſingular providence may entertain of it, I ſhall confirm it by the following paſſage from Derham's phyſico-theology, B. 4, C. 2. Of which defence againſt the moſt ſevere cold, (namely the warm exhalations from the ſea,) we have lately had a convincing proof in 1708, when England, Germany, France and Denmark, and even the more ſoutherly parts of Italy, Switzerland, and other countries, ſuffered ſeverely; whereas

loſophical tranſactions * N° 324. In relation to this truth, a certain French geographer muſt be allowed to be in ſome meaſure right, though the aſſertion ſeems very ſingular and unheard of, " L'air eſt fort doux en Norvegue, de ſorte que la mer n'y gele point, et la neige y eſt fort peu de tems." i. e. In Norway the air is very temperate, ſo that the ſea is never frozen, nor does the ſnow lie long upon the ground.

Les Etats, Empires et Princip. du Monde, par Sieur D. T. V. v. p. 777.

## SECT. VII.

The aforeſaid writer probably had his account from ſome Norwegian, who was acquainted only with the weſt ſide of the country; for the deſcription by no means agrees with moſt of the provinces, and eſpecially all the eaſtern parts near Filefield. The intenſeneſs of the winter is there extreme, particularly in the levels on the mountains; which are far more expoſed to the ſeverity of the air than the valleys, and reach towards the upper region of the atmoſphere which is much colder than the lower, as the reflexion of the ſun is there leſs powerful, and the air more rarified. The uſual degree of the cold, eſpecially in January and February, may be ſufficiently conceived from hence, that the largeſt rivers, with their roaring cataracts, are arreſted in their courſe by the froſt, and the very ſpittle is no ſooner out of the mouth, than it is congealed, and rolls along the ground like hail. A farther inſtance of the extreme cold, not unworthy notice, eſpecially as it raiſes aſtoniſhment in foreigners, is, that no ſooner has a horſe dropped his excrements on the ice, than the balls of horſe-dung move and leap on the ground: The cauſe of this is the ſudden change from heat to cold, which occaſions a violent conflict, when the ſharp and denſe air penetrates forcibly into the lighter, and expels it *.

The cold moſt ſevere in the eaſtern parts.

It

whereas Ireland and Scotland felt very little of it, more than in other winters. But it ſeems this is what ordinarily befal thoſe northern parts, particularly the iſlands of Orkney, of which the learned Dr. Wallis gives the following account, " there the winters are generally more ſubject to rain than ſnow; nor doth the froſt and ſnow continue there ſo long as in other parts of Scotland; but the wind in the mean time will often blow very boiſterouſly, and it rains ſometimes, not by drops, but by ſpouts of water, as if whole clouds fell down at once, &c." Likewiſe M. Lucas Debes, in his deſcription of the Ferro iſlands, affirms, " that the winters there are not very cold, though they lie in the 62d degree of latitude; the froſts ſeldom laſting longer than a month, and are withal ſo moderate, that no ice is ever ſeen in an open bay, nor are the ſheep and oxen ever brought under cover.

* Of the ſmall and piercing darts of ice, as they are called, which are particularly ſhot forth by the north, and north-eaſt winds, the very learned Jens Spidberg, deaf

on

It is neceſſary to uſe great caution in providing againſt ſuch weather, in which an unexperienced or unguarded traveller may be deprived of his noſe and ears; it is particularly expedient to cover the face, and for this the moſt approved method is to fix a piece of gauſe under the hat; which both retains the warm effluvia iſſuing from the body, and keeps off the piercing air better than would be imagined; allowing at the ſame time ſight enough, to guide the horſe. Some now and then rub their faces with a handful of ſnow, as enabling it, better than by warmth, to bear the cold; but in long journeys over the higheſt mountains, where the air is much keener, and the winter quite inſupportable, no precautions would avail, without the convenience of the mountain-Stoves, as they are called, which are kept at the public charge for the repoſe and warmth of travellers. Of the neceſſity of theſe, and the impracticableneſs of the mountainous and deſart parts in the winter-months, the Swedes afford a melancholy inſtance; and as the like is ſcarce to be found in the hiſtory of any age, I ſhall here give a ſhort account of it. In February 1715, ſeven thouſand, ſome ſay nine thouſand Swediſh ſoldiers, together with their officers, periſhed in a moſt deplorable manner on the mountain of Ruden, or Tydal, which ſeparates Jempteland in Sweden, from the Dioceſe of Drontheim, without any other enemy than the extreme cold; which ſurpriſed them on the ridge of that mountain, where nobody could come to their aſſiſtance. The affair happened in this manner:

Several thouſand Swedes periſh in the froſt.

In the autumn of the preceding year, this corps, which then conſiſted of ten thouſand men, had penetrated into the country, and appeared to have a deſign upon Drontheim; thereby to clear a paſſage for the main army, which was at that time under the command of the king in perſon, and had made an irruption near Frederickſhall, and to facilitate its farther progreſs into

of Chriſtianſand, bears the following teſtimony, "It cannot be denied, that the air towards the north is in winter-time full of innumerable particles of ſnow and ice, which are frequently ſo large and ſenſible, that when the wind blows freſh, they dart into the face, and give it a pain like the ſmart of a ſwitch; and they are not only felt, but when the cold is very intenſe, and the ſun ſhines clear, theſe particles may be viſibly diſcerned, glittering like ſo many little Stars." And this accounts, why the north wind is of a more penetrating coldneſs than any other, that in its paſſage, it ſweeps along the ſnowy mountains of the north, and thus becomes impregnated, as it were, and loaded with theſe particles, or lamellæ niveæ et glaciales, which among us occaſion ſuch a ſharp cold. Supplem. II. Actor. Vratisl. Art. 4. p. 71.

Nor-

Norway, but the gallant Daniſh general Budde, who, in the laſt invaſion of the Swedes, had done his country great ſervice, made ſuch good diſpoſitions againſt the enemy, that they laid aſide their deſign of attempting Drontheim, and cantoned themſelves among the peaſants, till the beginning of the year 1719; when, though late, they received an account by expreſs of the unexpected death of the king before Frederickſhall. Soon after, advice coming that Count Sponeck was in full march towards them, they had orders to make the moſt precipitate retreat over thoſe deſart and lofty mountains; but juſt as they had reached the frontiers of their own country, they were overtaken by a ſtorm, accompanied with an extreme cold, and much ſnow, which ſo bewildered them, that the greateſt part of them periſhed. A company of two hundred Norwegian ſledge-men, under major Emahus, which followed them cloſe to obſerve their retreat, found the enemy dead upon the mountains; ſome ſitting, ſome lying, and ſome in a poſture of prayer, all frozen to death. How great their diſtreſs muſt have been, may be judged from their cutting their muſkets to pieces, in order to burn what little fuel they could raiſe from them. The generals Labarre and Zoega were among the dead, but the generals Adlerfeld and Horn barely eſcaped with their lives; and of the whole body only two thouſand five hundred, or, according to others, no more than five hundred, ſurvived this dreadful cataſtrophe *.

## SECT. VIII.

Preſervatives againſt the cold.

From this accidental digreſſion I now return to the cold in Norway, which led me into it, and ſhall ſhew, according to my deſign, that the wiſe and provident Creator has not left the inhabitants of theſe cold climates without a greater variety of preſervatives againſt the weather, and more means of keeping themſelves warm, than other countries afford. 1. The country abounds in large foreſts, affording them plenty of fuel, and timber for building ſtrong houſes: 2. The wool of the ſheep, and the furs and

* Whoever conſiders this great loſs, which was inflicted by the hand of God, and the many other defeats, particularly at Moſs, Frederickſhall, Ringerige, Crogſtoven, Iid, and elſewhere, cannot but wonder that Mr. Nordberg, an hiſtorian of great merit in other reſpects, ſhould in the ſecond part of his life of Charles XII. affirm, that the war was carried on with equal advantage, or rather on the Swediſh ſide with conſiderable ſuperiority. "Par là les forces de Charles XII. furent aſſez egales à celles de ſon ennemi. Il fit trois campagnes en Norvegue avec un avantage aſſez egal et même avec ſuperiorité." An aſſertion without the leaſt truth. But the circumſtances of this laſt war were never rightly underſtood by foreigners.

ſkins of wild beaſts, furniſh them with warm linings for their clothes, and good bed-covering: 3. The innumerable flights of wild fowls ſupply them with down and feathers: 4. The mountains themſelves ſerve them for fences, and retreats; their ſummits, indeed, are unhabitable, on account of the cold and barrenneſs; but the ſhelving ſides, or interſtices, eſpecially where the expoſure does not face the north or eaſt, enjoy weather that is at leaſt ſupportable. But above all it is to be obſerved, that even the cold air occaſions warmth in the bodies of men; its compreſſive force rendering the body more firm and compact, and fortifying it againſt external injuries: and thus the natural warmth is by the cloſeneſs of the pores repelled towards the inner vital parts, and more particularly concentrated in the ſtomach; ſo that the northern people are known to digeſt ſmoked fleſh, dried fiſh, and other food hard of digeſtion, better than any other nations *. In ſhort, in this as in every other reſpect, the œconomy of the Almighty towards his creatures is full of wiſdom, goodneſs, and harmony. I can even venture to affirm, that were the Norwegians tempted by any thing to change countries with the Italians, the winter's cold would not be the motive to the exchange: for this is the leaſt of their complaints; and, for my own part, I cannot ſay that the cold here has ever been more painful to me than in other parts.

## SECT. IX.

Great heat in ſummer, and its cauſes,

After this account of the cold in Norway, it is proper to ſpeak of the heat. Here I apprehend many would interrupt me with a queſtion, whether it is ever actually warm in Norway? I anſwer from experience in the affirmative: for in the beſt ſummer-months it is not only warm, but ſometimes to ſuch a degree, that according to the vulgar phraſe, *it may make a raven gape*; and perſons, who have been born and educated in hot climates, might fancy themſelves ſuddenly tranſported home. Particularly in this preſent year 1750, on the laſt day of July and firſt of Auguſt, the

* That the particles of the atmoſphere are more condenſed near the poles, and conſequently preſs more forcibly on bodies, than in the expanded and rarified air of hot climates, inſomuchthat 1010 pounds of copper at Drontheim, weigh only 1000lb. at Rouen, is demonſtrated and explained by J. Rohault, Traité de Phyſique, Tom. II. P. III. C. III. § 9. where he alſo ſhews, that the mercury riſes higher in Denmark and Sweden, than in France and Italy.

heat was ſo exceſſive, that M. Haar, miniſter of Waas, and formerly chaplain in the Eaſt Indies, declared he hardly ever felt it hotter in that country; tho' I am inclined, partly, to impute this, to the much ſtronger impreſſion made on the mind by preſent ſenſations, than by the recollection of any paſt *.

The cauſe of theſe violent heats (which however are but of ſhort duration) may be partly derived from the valleys incloſed within high mountains, where the rays being compreſſed and confined, the reverberation of them from all ſides muſt occaſion ſuch heats, as were the ſummer of any conſiderable length, would bring grapes, and other fruits and vegetables, to the like exquiſite perfection as in other countries. The ſecond, and which is the chief cauſe, is, that in the midſt of ſummer, the ſun's abſence below the horizon, is ſo ſhort that there is no night, at leaſt no total darkneſs; conſequently neither the atmoſphere nor the mountains have time to cool, but often retain part of the heat of the preceding day; and if the general opinion of naturaliſts, that a mineral ſoil emits ſulphureous and hot effluvia, be true, this may come in for a third cauſe of the heat, the country being almoſt every where full of mines.

There cannot be a more deciſive proof of the ſummer's heat in Norway, than that ſeveral vegetables, and particularly barley, grows up and ripen within ſix weeks or two months; which, beſides the great profit, is of very conſiderable advantage to the peaſant, as it enables him to begin threſhing when he will, which he is often under a neceſſity of doing very early. It is ſaid, that the ſame happens in Sweden within a much ſhorter ſpace, namely, 36 days; but this I mention only on the authority of the celebrated Olaus Magnus, who has the following paſſage concerning it, "Quoad Aquilonares hoc certum eſt, in pleriſque agris Weſtrogothorum, parte objecta meridionali plagæ, hordeum ſpatio 36 dierum a ſemine projecto maturum colligi; hoc eſt, a fine Junii ad medium Auguſti, aliquando celerius" †. It is certain that, where nature has but a ſhort time to work, ſhe accelerates her opera- Early harveſt.

* It appears, that in the countries lying far north, the great length of the days often renders it warmer than with us. Wolffius's Phyſic. Part. II. Chap. VIII. p. m. 180.

† On my viſitation in the year 1750, I ſaw at Indwigen, in Nordfiord, barley ripe and mowed on the 29th of July. Of the vegetables of the country I ſhall hereafter ſpeak more at large.

tions,

tions, and acts with greater energy. In our northern gardens, it is indeed ſeldom that the winter fruits can attain to their proper maturity; but thoſe of the ſummer keep pace with thoſe of Denmark, where ſtrawberries, cherries, and the like, are ripe ſo early as the firſt of July. Counſellor Carbiner has more than once had ripe figs, in his garden at Bergen; and in Chriſtiana, M. Wilſter, an apothecary, has ſeveral years brought grapes to a degree very little ſhort of perfect maturity.

## SECT. X.

False notions of foreigners concerning the air in Norway.

From theſe inſtances, I preſume, foreigners will have the candor to admit, that however natural and laſting the cold may be in Norway, yet the impartial Sovereign of nature has not ſo far neglected us, but that we may paſs our days agreeably; eſpecially, if it be conſidered, that what the climate of Norway denies, it abundantly compenſates in other advantages; of which I ſhall hereafter have occaſion to adduce ſeveral proofs, partly in praiſe of the Creator, and partly for the information of foreigners, and the confutation of that very falſe idea, which, even in my own country, men entertain of the rigorous and unpleaſant climate of Norway; which is ſeldom mentioned but with a commiſeration, of which it is not a preſſing object. But no conceit is more abſurd than that of Simon Patrick, a native of England, and in other reſpects a writer of great learning and worth; who repreſents a Norwegian as one who had never ſeen a roſe (which is a very common flower in Norway) and was afraid to touch it, imagining it to be fire *. Who would have thought, that an European could be ſuch a ſtranger to Norway, and an Engliſhman too, who ought to know it better from the equality of its ſituation with the North of Scotland, this being nearly in the ſame degree of latitude with the biſhopric of Bergen; not to mention the frequent

* This paſſage occurs in a piece of his, in which he inſtructs and cautions a friend againſt lukewarmneſs and apoſtaſy from the Chriſtian religion. His words are to the following import: "The poor Norwegian, as hiſtory informs us (I aſk what hiſtory?) was afraid at the firſt ſight of a roſe to touch it, being apprehenſive of burning his fingers; he was aſtoniſhed that trees, as he imagined, ſhould produce flames and fiery flowers; he moved his hand towards it to warm himſelf, but could not be prevailed with to touch it; but as he was over-joyed to be delivered from ſuch a groſs miſtake, being afterwards brought not only to touch but to ſmell this innocent flower, which at firſt appeared to him to be a fire, ſo it will be with us, &c." And juſt ſo would it have been with the worthy author, had it been his fate to have come to Norway, and there to have ſeen the roſes growing every where.

voyages

voyages of the Engliſh to Norway, ſome of whom are very well pleaſed to ſettle there; or the conſtant voyages of Norwegians to England, who, if the trade would turn to any account, might furniſh the Engliſh abundantly with roſe-water.

## SECT. XI.

Quality of the air in reſpect to health and ſickneſs.

If the air of Norway be conſidered in reſpect to health and ſickneſs, particularly as to the natives, it will appear to be pure and ſalubrious from many inſtances of perſons of a very advanced age, eſpecially among the peaſants. Mr. Jonas Ramus, in his Chorographical Deſcription of Norway, is of opinion that a more healthy air in ſummer is hardly to be met with any where than in Norway; though I muſt confeſs, that this varies according to the ſituation of places. The moſt pure and kindly air, I judge to be, in the middle of the country, eſpecially about the mountains, where the inhabitants have hardly an idea of ſickneſs, unleſs it be hereditary, or contracted by intemperance. It is reported, though I will not warrant the truth of it, that in the vale of Guldbrand, which is regularly viſited by very ſalubrious gales, eſpecially in the pariſh of Læſſoe, there are perſons of ſuch an extreme age, that from a laſſitude of longer life, they get themſelves removed elſewhere in order to die the ſooner; that farther in the province of Valders, and in other parts, meal may be kept many years without being worm-eaten, or any other damage; which amounts to a demonſtration of the purity, wholſomneſs, and dryneſs of the air. But on the other hand, on the ſea-coaſts, and here in Bergen, I account the air to be leſs healthy from the abundance of humid and ſaline vapours from the ſea, eſpecially in winter, when the miſts and rain are more frequent than clear froſt; yet with the aſthmatic, this moiſt air agrees better than a finer or drier, which may be more piercing; a proof of this I had in an intimate acquaintance of mine, who found his breaſt and lungs conſiderably eaſed after his arrival from Denmark, which I attribute to the air here, as more humid than that of Copenhagen, tho' the latter in winter is not without frequent fogs and rains *.

* This may poſſibly be the cauſe that a very dry air hurts conſumptive perſons, by too ſtrong a tenſion of their weak lungs, and by detaching and carrying off too

Generally ſpeaking, experience, the beſt inſtructor, ſhews the air in moſt places of Norway to be pure and ſalubrious, and even more ſo than in many other countries, as perſons of regular lives, all circumſtances duly conſidered, arrive in theſe parts to the utmoſt extent of the age of man. I ſhall produce many memorable inſtances of this hereafter, when I ſhall particularly treat of the inhabitants of the country; and the ſame is evident from the yearly bills of births and burials, which, by his majeſty's order, I tranſmit to Copenhagen. I ſhall here only mention, that next to their plain and ſimple food, the Norwegians owe their permanent health and longevity more to their air, than to medicinal arts and precautions; for medicine is very little underſtood here; the little we know of it is learnt from foreigners; and whilſt the lawyers are never at a loſs for clients, practitioners in phyſic meet with very few patients.

It is only in the chief towns that phyſicians are commonly to be found, and there they are eſtabliſhed with a public ſalary, as Provincial phyſicians, and in general have but very little employment; even in this populous city of Bergen, among thirty thouſand ſouls, (ſome indeed carry the number higher, but I believe they are miſtaken) there is but one, or at the moſt two phyſicians, and theſe are found ſufficient; whereas in a German city of the ſame extent, ſuch as Lubeck, or Roſtock, ten or more may find an ample ſupport. Norway, indeed, cannot be ſaid to be entirely exempt from peſtilential diſtempers, for the Black-death, known all over Europe by its terrible ravages, from the years 1348 to 50, was felt here as in other parts, and to the great diminution of the number of the inhabitants. I likewiſe find accounts of great numbers of people of all ranks, ſwept away in the years 1618, 1630, and 1654. But the piercing colds of winter, and the ſtorms ſeem to be a divine diſpoſition for purifying the air, and ſtopping the progreſs of an epidemical diſeaſe. The like good effect is produced by thunder and lightning, which diſſipate the ſulphureous and nitrous particles in the air. It is a general notion, that ſtorms and tempeſts are more violent here than elſe-

much of the inward moiſture. The moſt robuſt perſons ſuffer ſometimes by this extreme ſiccity of the air. The people of the eaſtern coaſt of the Red-ſea are ſometimes obliged to ſprinkle water up the air to moiſten it, and when they breath, hold a wet cloth to their mouths. Hamburg Magazine, B. 11. page 38.

where,

where, but in this I am inclined to think the ſound impoſes on our judgment, the noiſe and eccho of winds and thunder being much louder among the lofty mountains than in the plain country. This difference I have found, that ſometimes, tho' ſeldom, thunder is heard at Bergen in the winter, doubtleſs becauſe that ſeaſon of the year is, as hath been already ſhewn, attended with very little pure cold, but rather with a raw air, and of courſe with more rain than ſnow and hail.

## SECT. XII.

Rains and damps on the weſt-ſide.

As to the humidity of the air, rains being ſo unuſually frequent at Bergen, and for ſome miles round, as to be proverbial among the Dutch; I apprehend the cauſe may be derived not only from the high mountains, there being in other parts of this dioceſe much higher mountains, with much leſs rain, but rather from the many narrow valleys and creeks in the neighbourhood, which become ſoon filled with their own evaporations as well as thoſe from the ſea, and theſe are not ſoon diſpelled by the wind or ſunſhine, except in the heat of ſummer, when the ſun has ſufficient power to draw them up into the open air above the ſummits of the mountains, there to be ſeparated and diſpelled by the wind. Whereas, on the contrary, in other ſeaſons of the year, when the power of the ſolar rays is weakened, the vapours cannot riſe to any conſiderable height above the horizon *. Hence we ſee them hover like rain-clouds, and reſt not only on the tops of the mountains, but often hang about their ſides, inſomuch, that the top may be clear, and the middle of the declivity be covered with theſe rain-clouds: and when travellers or peaſants happen to be ſurprized among them, which is a common caſe, their ſight is ſo obſtructed, as not to ſee their way; they breath with difficulty, grow wet and cold, and un-

See a view of Bergen, fig. 1.

* If the old opinion, of the ſun's exhaling the vapours upwards, ſhould not prevail againſt the new, which holds, that ſmall veſicles of air are impelled upwards, and being lighter than the lower air, float in it. Wolff's Phyſic. Cap. v. Sect. 247. Yet my conjecture on the rain at Bergen ſtill keeps its ground; for the eminent naturaliſt juſt cited, allows that the winter-vapours are heavier, and as ſuch ſink lower into the atmoſphere, or cannot aſcend ſo high, the teguments of their ſmall veſicles being then condenſed, ſo that the effect produced is the ſame. His words are, Sect. 254, "The vapours being rarified in the heat of ſummer, they then riſe to a great height in the air:" Again, "the groſſer vapours, having a thick tegument and a ſmall cavity, are heavier, and remain in the lower region of the air, this being of a more denſe nature than the upper; thus in winter, the vapours being condenſed by the cold during that ſeaſon, remain in the lower parts of the atmoſphere.

leſs

leſs they ſpeedily reach the open air their health is endangered. Theſe rain-clouds are like ſpunges ſwelled with water, and on any preſſure, or when driven againſt the mountains, diſcharge their waters in heavy rains, and cauſe that conſtant humidity *. On this account, indeed, Bergen is not ſo pleaſant to live in as ſeveral other places in Norway are; and the women, who ſeldom have the uſe of coaches, are in all weathers obliged to wear a woollen or ſilken black veil over their heads, whilſt the men ſecure themſelves from the rain by rain-hats, made like umbrellas.

## SECT. XIII.

The wiſe diſpoſition of Providence in this.

As one of my chief views in this work is, according to my ſhallow knowledge and inſight into the harmony of things, to ſhew that all the works of God are full of loving kindneſs, I muſt here obſerve that the moiſt and rainy weather, which prevails all over the weſtern coaſt of Norway, but chiefly about Bergen, is excellently adapted to the neceſſities of the country, and in ſeveral reſpects contributes to its welfare. Firſt, it is of great benefit to the countryman in his corn and hay-harveſt, for the thin ſurface of earth on the high rocky mountains, which line the weſtern coaſt, requires a great deal of moiſture, otherwiſe it would not yield even graſs, and much leſs would it produce corn; it would literally anſwer to the parable of the ſeed, *which fell on a rock and withered away, becauſe it lacked*

* Edward Dapper, in his voyage to Africa, page 56—58, thus accounts for the heavy rains in Ethiopia, which cauſe the famous inundations of the Nile, "the ſunbeams, ſays he, exhale the vapours; afterwards the middle air, which is cold, and adheres to the cold ſummits of the mountains, diſſipates the clouds which the north-wind has aggregated, or diſcharges them in rain." What this writer attributes ſolely to the north-wind, profeſſor Kraft, on better grounds, judges to be an effect of that attraction which is moſt diſcernible on high mountains, but in ſome meaſure affects the whole globe, which revolving like a wheel, has an attractive power: His words are theſe, "I have often obſerved in fair weather the high mountains to be covered with a thick cloud, as ſoon as there is the leaſt hazineſs in the air, and from hence it is that in mountainous countries, the rains are both more frequent and more violent, than in a champain country." The ſingle cauſe of this, is, the attraction of the mountains, for the attractive power of large mountains, may in ſome meaſure be proportionate to the attractive power of the earth; therefore when neither of theſe attractions are impeded in their operations, and the proportion is adjuſted, the direction in which a particle floating in the air moves towards the mountain may be determined. This is proved from the ingenious obſervation made by Meſſ. Bouger and de la Condamine, on a mountain called Chimboraço, in Peru, when their plummet was by the mountain drawn aſide from its perpendicular direction. The ſprings found on the tops of mountains are produced by this attraction; and as many particles of matter as are ſeen in connection, ſo many inſtances are there of this attractive power. Reflections on the Newtonian and Carteſian Syſtems, by profeſſor Kraft, in Actis Soc. Hafnienſ. Tom. III. p. 284. ſq.

*moiſture*. Thus theſe deficiencies, in reſpect to vegetation, are ſupplied by the rain which continually moiſtens the little earth we have. Indeed, in moſt places, the rain would not be ſufficient without the maſſes of ſnow on the tops of the mountains, or when theſe are wanting, the many pieces of ſtanding-water on their ridges, which ſometimes by ſubterraneous ooſings, ſometimes by gentle ſtreams, thoroughly water the earth, and afford a conſtant refreſhment to the parched ſides of the mountains. Whereas, in the vale of Guldbrand, and other parts where the rains are not ſo frequent, and the mountains not ſo ſteep or thick ſet as here, the water is conveyed into the fields by trenches, and thrown upon the cultivated ground with ſhovels, as is practiſed in Perſia, and other hot countries. A ſecond benefit of this wet and rainy weather, eſpecially when calm withal, and chiefly in ſpring, is, that it gives fiſhermen the advantage of larger draughts; for in clear and open weather the herrings, ſkates, &c. which are every year taken here, and in Nordland, to the amount of many tuns of gold, are generally ſhy of venturing near the ſhore, and into the bays, but in rainy or hazy weather, the fiſhermen meet with numberleſs ſhoals of them.

## SECT. XIV.

In the preceding articles, I have ſhewn the diverſities of the northern air, in reſpect to cold and heat, froſt and thaws, both in thoſe provinces which are equidiſtant from the line, and in the eaſt and weſt parts of the country, and it is the ſame in reſpect to fogs and rains. Filefield uſually makes a very remarkable difference betwixt us and our neareſt eaſtern neighbours, in the province of Valder, inſomuch that when it is foul weather with them, with us it is fair, and ſo vice verſa. The courſe of the air, when impelled againſt the higheſt mountains, is checked, for it ſeldom aſcends to paſs over them. Of this I was an eye-witneſs in my return from Chriſtiania in 1749, when travelling on the 24th of June over the higheſt part of thoſe mountains, I obſerved thick rain-clouds hanging over Valders, which we had left, and where it had been rainy for ſeveral days; upon the hill we had a little ſleet, but in the valley of Laerdale, where we arrived at our deſcent from the mountain, the weather was

Diverſity of weather in parts contiguous to each other.

warm and dry, and had been ſo for a conſiderable time before. But this caſe is common to Norway, with other mountainous countries, which I ſhall here take occaſion to illuſtrate by ſome parallel inſtances: We are informed *, that whilſt the ſummer ſeaſon laſts, from cape Comarin to the coaſt of Coromandel, it is winter during that time, from Diu to the aforeſaid cape. In like manner, on one ſide of the mountain called Gates, or Ballagates, the fields are cloathed in their verdure, and the country appears in all the gaiety and luxuriancy of ſummer; whilſt, on the other, it is covered with fogs and rain. Something ſimilar to this is alſo obſerved from Ormus to Cape Roſalgate, where the ſhips may harbour and enjoy the moſt delightful weather imaginable, whereas beyond the cape they meet with hard gales, rain, &c. A further account of theſe remarkable particulars the reader may meet with in Paul van Caarden's voyage to the Eaſt Indies.

## SECT. XV.

Deep ſnows on the mountains; their advantages and detriment.

From the conſideration of the rain, I am naturally led to ſpeak of the ſnow, eſpecially as both are the ſame in ſubſtance, differing only in texture and figure, which depend on the warmth or coldneſs of the air, as I myſelf experienced in coming down a mountain, where, till about half way, we had ſnow, but a little lower the flakes of ſnow were melted into drops of rain. Now in Bergen theſe ſnows ſeldom lie long; for it muſt be a very extraordinary winter, when the ſledges are uſed a fortnight ſucceſſively; whereas in the other northern provinces the ſnows are very thick and laſting, and lie long; and on the ſummits of the mountains, or in the cavities far north, which are inacceſſible to the ſun-beams, the ſnow lies throughout the whole year; and the contraſt betwixt the lively verdure of the fields and the gliſtering whiteneſs of the mountains is not diſagreeable. The upper region of the air, (where the atmoſphere being thinner than near the earth, the ſun-beams are leſs intercepted and reverberated) is always extremely cold, even in the warmeſt countries. This is the caſe in Switzerland and Italy, and even in Perſia, according to Taver-

* Concerning this I refer the reader to the northern voyages with Mr. Robert Boyle's Inſtructions for travelling with advantage, where we find the above obſervations on the difference of the air in hot countries at a ſmall diſtance from each other.

nier; and in Ethiopia, according to Ludolph and others, the tops of the mountains, as here in Norway, are covered with ſnow both in winter and ſummer. In ſome places far north the undermoſt lays of ſnows, by long lying, turn to a bluiſh ice, called in our language, Jiſbrede, which ſometimes ſlides down to a conſiderable diſtance over the lower grounds, to the no ſmall detriment of the peaſants. In Juſtedale, which lies high among the mountains, one of theſe Jiſbredes, detached from an ice-mountain, deſtroyed ſome farm-houſes and lands, and further damage is yet to be apprehended *.

However, both here, and in other parts, eſpecially in the eaſtern, the ſnow is highly beneficial to the peaſants, partly in forming a paſſable road in the winter, without which all traffic and intercourſe with the champaign country would be cut off; yet here they are often obliged to put on their Truviers † (a kind of ſnow-ſhoes, broad and round, made of withies, for keeping the feet from ſinking in the ſnow) and ſometimes they muſt even be put on the horſe's hoofs. Another contrivance for travelling on the ſnow are ſkies, or long and thin pieces of board, and ſo ſmooth, that with them the peaſants wade through the ſnow with all the expedition of ſhips under full ſail. In war time a corps of 4 or 600 of theſe ſkie-men are very ſerviceable as light troops, for reconnoitring, procuring intelligence, or for any ſudden enterprize; no place being inacceſſible to them, and they being always ſure of coming upon the enemy by ſurprize. The ſnow alſo improves the fertility of the ſoil, and is ſuppoſed in ſpring, to anſwer the ends of manuring; it likewiſe ſerves for a fence and ſhelter againſt ſevere colds and winds. When the ſnow is not off the ground early enough in the ſpring, for the huſbandmen to begin the work of that ſeaſon, they ſpread over the ſnow a kind of rich black mould, which, in a few hours, entirely diſſolves it. But, on the other hand, the peaſants are often ſufferers by the ſnow, which, when it falls in great quantities, and lies

* Nix jacet et jactam nec ſol pluviæq; reſolvunt.
Indurat Boreas perpetuamq; facit. OVID.

† Some entertaining accounts of theſe Truviers, or ſnow-ſhoes, which in other parts are alſo called Rackets, are to be ſeen in Hennepin, Tom. II. cap. 27. and in the ſeveral hiſtories of the countries and nations of America.

long

long on the ground, deſtroys thouſands of young trees: likewiſe when it falls late in the ſpring, and after the trees begin to put out their leaves, which, however, happens very rarely, ſome trees, and eſpecially the alders, wither and die; a prognoſtic of which is the leaves turning to a browniſh hue. It has been known, and particularly in the year 1742, many people were eye-witneſſes of it, that a ſpecies of black maggots fell along with the ſnow, whereby extreme damage was done to the grain and paſture. But among the miſchiefs occaſioned by ſnow, the greateſt are the Snee-ſkreed, or Snee-fond, that is, when a maſs of ſnow, falling from a precipice, overwhelms both men and cattle, overſets boats in the lakes *, and, which is but too often the caſe, demoliſhes cottages and houſes, inſomuch that even whole villages are born down, cruſhed, and totally deſtroyed; but this laſt calamity is rather an effect of the incredible violence of the wind, driving on the maſſes of ſnow, when they begin to give way, than of thoſe maſſes themſelves, houſes having been ſeen to fall ſome ſeconds before the ſnow had reached them. Theſe ſnow-falls are of two kinds; the firſt, when in froſty weather the light ſnow is ſuddenly ſet in motion, and in its progreſs ſcattered over all the country, which the peaſants call Meel-fond, and is not attended with ſuch damages as the other, which is known by the name of Kremfond; theſe happen, when by the miſts and rains in ſpring, the ſnow, which by moiſture is conſolidated, falls in a maſs, which, tho' ſlower in its deſcent, leaves ſtronger impreſſions on the ſides of the mountains, bearing down every thing in its way, even the ſtrongeſt new buildings.

Snow-falls.

A whole pariſh loſt in the ſnow.

By a ſnow-fall of the firſt kind, a whole pariſh, ſituate between Quindherret and Hardanger, a century or two ago (for the preciſe time is not certainly known) was wholly covered, and ſo re-

* Theſe accidents it ſeems are not unknown in Switzerland: "Souvent il tombe du haut des montagnes des maſſes de neige prodigieuſes, que les allemans appellent Lawinen et les Romains Avelanches, qui tombant avec impetuoſité, font un bruit auſſi grand que celui du tonnere. Non ſeulement elles enveloppent gens et betes, mais elles entrainent et emportent des arbres et des maiſons entieres. Le poete Claudien qui vivoit au iv ſiecle, nous apprend qu'on connoiſſoit deja ces choſes de ſon tems:

——— multos hauſere profundæ
Vaſta mole nives, cumque ipſis ſæpe juvencis
Naufraga candenti merguntur plauſtra Barathro;
Interdum ſubitam glacie labente ruinam
Mons dedit, &c. Delices de la Suiſſe, Tom. 1. p. 27.

manis

mains to this day; the ſnow which had thus fallen from the adjacent mountains, not diſſolving the year after, was further gradually increaſed, and hardened by lying, the ſituation being high, and hemmed in among the mountains. Many lives were loſt in this diſaſter, of which no memorial would remain, were not the truth of the ſtory, which was at firſt much doubted, ſtill confirmed by ſeveral utenſils, as ſciſſars, knives, baſons, &c. brought to light by a rivulet which runs under the ſnow; an inconteſtable evidence that this ſpot was formerly clear of ſnow, and inhabited. Such diſaſters, God be praiſed, are ſeldom heard of; and the perpetual ſnows which always cover the ſummits of the higheſt mountains, may, notwithſtanding, be juſtly ſaid to be rather neceſſary and advantageous, than abſolutely detrimental; and thus may be reckoned among the bleſſings of providence. Experience ſilences all cavils on this head, the ſnow being known, by age, to become ſo firm and indurated, that a horſe's ſhoe makes no impreſſion on it; and as it yields very gradually to the ſun, it is thus ſparingly diſpenſed for the daily benefit of the inhabitants beneath, except in a damp ſoutherly wind, which penetrating the ſnow, the mountains pour down whole torrents. Theſe accumulated ſnows thus become conſtant ſprings for promoting vegetation in the champaign grounds, and when theſe ſprings are too early exhauſted, the graſs and corn inevitably ſuffer, and are ſometimes withered for want of moiſture. Another convenience of theſe currents, and likewiſe of their impetuous deſcent, is, that they drive great numbers of little mills, every farm-houſe * having its own mill. A third advantage of them redounds to the oxen, cows, ſheep, and goats, which in ſummer are turned out upon the mountains for paſture, where they are ſo extremely tormented with the heat, with gnats and muſketoes, that they run about regardleſs of danger, and in this frenzy many have loſt their lives, falling down the precipices; this lays the peaſants under a neceſſity, where no ſnow is near, of building ſheltering places for the cattle; but if any ſnow-hill be in ſight, the cattle move towards

* In the eaſtern provinces, which are leſs mountainous, the people not only labour under a great ſcarcity of water, but in ſeveral parts, the mills are at a great diſtance; but this evil might be remedied, if hanging wheels were uſed inſtead of fixed ones; there are but few places where a ſufficient water might not be found for thoſe, which require ſo much leſs than the others now in uſe.

it, knowing they ſhall there be relieved by the coolneſs, which it communicates to the air. A further remarkable inſtance of divine goodneſs in this caſe is, that juſt as far as the ſnow melts, and runs from the mountains, the very beſt graſs is obſerved to grow, and in the greateſt plenty; its warm covering, ſo far from being an obſtruction, both forwarding and improving it. Such are the effects of infinite power, wiſdom, and goodneſs, even where at firſt ſight they are leaſt expected.

## SECT. XVI.

Regular and irregular winds.

It will not be improper to ſubjoin ſome account of what I have collected in my annual circuits, by my own experience and that of others, relating to the winds in Norway. The winds which moſt prevail here at Bergen, and all along the weſtern coaſt, are the ſouth, ſouth-weſt, and ſouth-eaſt, which laſt is uſually called the Land-South. And in moſt winters, when on the other ſide of the mountain called Filefield, the north, the eaſt, and north-eaſt winds uſually bring on and continue the hard froſts, they ſeldom laſt a fortnight on the north of the mountains called Nordenfield, towards the ſea. Here we generally enjoy a ſoutherly wind, which together with the warm vapours, are, as I have already obſerved, ſubſervient to the provident end of the Creator, in keeping open the ſea for the fiſhermen, and warding off the ſeverity of the winter, of which we have leſs than they who live in the middle of Germany; altho', in exchange, we have rain and foul weather, which is not ſo pleaſant as a clear froſt. It is ſeldom that the wind here is directly weſt, it is generally ſouth-weſt, or ſouth-eaſt, which fills the creeks with the ſea-vapours in abundance, which afterwards, floating among the mountains, become rain-clouds. A north, north-weſt, and eſpecially a north-eaſt wind, are little known here; but when they blow, they verify the words of Solomon, *the north-wind driveth away rain.*

The eaſt winds, which frequently come from the ſhore, and drive the watry clouds out of the creeks, are beſides very temperate, and ſo are accounted the moſt ſalubrious winds, and are the more welcome to us, as uſually cauſing dry weather, but on the contrary, ſouthward, beyond the mountains, they commonly bring rain. The inhabitants of the large province of Nordland, who,

in

in not leſs than two hundred barks, viſit Bergen every year, at the fair and the aſſizes, and moſt of whom have upwards of an hundred leagues to ſail, are often favoured with the north and ſouth winds, like regular trade-winds, though not ſo infallibly to be depended on. The wind which is, with the greateſt certainty, expected towards harveſt, is the north-eaſt, called Hambakke, which name it derives from the melting of the ſnow at that time from the ſummits of the mountains; but there is alſo here, in ſummer time, and in a clear ſky, another kind of a daily trade-wind along the coaſt, and in the creeks, known by the general appellation of Soelgangs-Veyr, the weather of the ſun's courſe; and in Northland, Soelfar-Vind (the wind of the ſun's courſe) the wind then following the ſun. Nic. Hartſoeker attributes this alternative to the ſun, which in the morning heats the coaſt, and conſequently rarifies the air, but on its declenſion in the evening, the air cools, and conſequently recovers its gravity, and being thereby become heavier than the ſea-air, its own weight carries it thither, and occaſions a kind of ebb and flood in the air, the fluid parts whereof undergo the ſame agitation as water *. A little before noon in the ſummer time, comes on a weſt, ſouth-weſt or north-weſt breeze, and holds till towards midnight; it is called Hafgul, (ſea-cooler) as coming from the ſea, and indeed it tempers the heat, which otherwiſe in the creeks and narrow valleys, would be inſupportable. Oppoſite to this is the Landgul (land-cooler) or eaſterly breeze, which beginning at midnight, or two hours after, continues till within two hours of noon, when it uſually ceaſes; towards harveſt the land-cooler begins to get the aſcendant, and the ſea-cooler to relax, and then the former is called the Korn-moen, i. e. Corn-mother, bringing a ſenſible warmth along with it.

Conject. Phyſ. L. II. Diſc. II. p. 65.

Beſides theſe regular winds, the coaſt is ſubject to Field-flagers (mountain ſqualls) or guſts from the land, by which, without the

Sudden ſtorms.

* To theſe viciſſitudes of the ſummer winds, which are in ſome degree regular, is applicable what Ariſtotle's diſciples write of the Eteſiæ, which were known in Greece, "Quod ad Eteſias attinet, cauſam harum ajunt eſſe reſolutionem nivium in hyberboreis ſuppolaris regionis montibus, quæ uti à ſolis radiis verberatæ atque in exhalationes reſolutæ, interdiu ventorum ſuppeditabant materiam, ita noctu dicta nivium reſolutione cum ſole quibuſdam quaſi induciis conſtitutis, ventos partiter ſilere cogebant." Athan. Kircherus in mundo ſubterr. P. I. L. IV. Sect. II. cap. III. p. 196. Likewiſe Dr. Arbuthnot in his Treatiſe of the Effects of the Air upon the Human Body: "The winds, when ſtrong, correſpond to each other; but, when they relax, they differ, as this proceeds from local cauſes. It is alſo clear that the Alpine ſnows influence the weather in England, as well as that at Zurich."

utmoſt

utmoſt precaution a veſſel is ſuddenly loſt in the ſecurity of fine and calm weather; for theſe blaſts iſſuing in a narrow and violent current from the clefts of the mountains, or from the vallies, behind a cape, or from the points of the high mountains, and being violently impelled againſt an oppoſite mountain, this reverberation cauſes a kind of hurricane in the air, which, for a time, may deprive the unwary of his ſight *.

Hurricanes and whirlwinds

But the real hurricanes, or whirlwinds, which ariſe, though ſeldom on the open ſea, are known to be extremely dangerous to ſhips, by their ſudden and rapid vortex, which throws the ſea at a ſmall diſtance into ſuch an agitation, that the water in drops flies up into the air like ſmoke. The common people, from an old ſuperſtition, call them Ganſkud, conceiting that a necromancer, of Fin-lapland, has then ſent out his Ganſly, as they call it, to do miſchief; but the true cauſe of the hurricane, is the ſudden exploſion of a wind confined and agitated in a thick cloud, which being impetuouſly diſcharged upon the water, the ſurface is ſeparated, and riſes up into the air like duſt or ſmoke, and hence, amongſt us, this hurricane is very properly called Roeg-flage, i. e. ſmoke-ſquall.

I ſhall take this occaſion to mention another wonderful phenomenon of the air, which likewiſe proceeds from denſe, and violently agitated clouds, not as any thing new and unknown in the warm climates, but as being, however, ſomewhat rare, and by experience very well known in the north. I mean the water-

Water-ſpout.

ſpout, or Trompe de mer, of which a credible perſon, who ſpent his younger years at ſea, gave me the following account; that on the wide ſea, betwixt Shetland and Norway, he and his crew, to their great aſtoniſhment, obſerved, in clear weather, and an eaſy breeze, a cloud gradually deſcending towards the water, and in the ſhape of a funnel, or rather a ſpiral ſnail-ſhell, attracting from the ſurface of the ſea a column of water of a conſiderable diameter; and this ſuction continued all the time they were in ſight. Some hours after came on a very violent rain, which, unqueſtion-

* Whether it be poſſible that a man and horſe may be carried forward by ſuch a whirlwind, and driven back by another ſtronger wind meeting him, without any damage to either man or horſe, muſt reſt upon the authority of a very credible writer, Mr. Lucas Debes, in his Deſcription of the Iſland Faro, p. 97.

ably conſiſted of the water, which that ſpiral cloud had a little before exhaled from the ſea *.

Filled with aſtoniſhment at the many and ſtupendous works of the Almighty (eſpecially in the air and its phænomena) I cloſe this ſubject with his own words in the xxxviiith chapter of Job, verſe 24, &c. *By what way is the light parted which ſcattereth the eaſt wind upon the earth? Who hath divided a water-courſe for the overflowing of waters, or a way for the lightening of thunder? To cauſe it to rain on the earth where no man is, on the wilderneſs, wherein is no man? To ſatisfy the deſolate and waſte ground, and to cauſe the bud of the tender herb to ſpring forth? Hath the rain a father? or who hath begotten the drops of the dew? out of whoſe womb came the ice? and the hoary froſt of heaven, who hath gendered it?* Concluſion.

## CHAPTER II.

### Of the ſoils and mountains of Norway.

SECT. I. *Of the ſoil of Norway in general.* SECT. II. *Several kinds of ſoil, as mould, clay, ſand, turf, mud, &c.* SECT. III. *Two kinds of mountains.* SECT. IV. *Extenſive chains of vaſt mountains, as Koelen, Seveberg, Dofre, and Filefield.* SECT. V. *Many leſſer mountains in all the provinces.* SECT. VI. *Deep and long cavities, like ſecret paſſages, in ſome mountains, with conjectures on the origin of them.* SECT. VII. *Effect of the deluge in diſſolving and ſoftening ſubſtances, which are at preſent of the hardeſt kind, but appear manifeſtly to have been ſoft heretofore.* SECT. VIII. *The origin of mountains, rocks, and ſmaller ſtones, deduced from the foregoing argument.* SECT. IX. *Detriment of ſo many rocks and mountains to Norway.* SECT. X. *Advantages of them, according to the wiſe and bountiful deſign of the Creator.*

### SECT. I.

THE diverſity which I have ſhewn in reſpect to the air, light, heat, cold, rains, and winds of Norway, is no leſs obſervable in the various ſoils of the earth, in the mould, ſand, Of the earth and ſoil of Norway in general.

* Mr. Lucas Debes, p. 12, of his Deſcription of Ferro, ſays, that ſuch a cloud, amonſt the Greeks, called Typhon, and among the northern people Oes, for it abſorbs the water, making a deep vortex in the ſea, drew up ſome laſts of herrings, and afterward dropt them on Kolter, a mountain about twelve hundred feet in height, page 14. He imagines that it is theſe Oeſes which in Norway attract ſtones, fleſh, mice, and, what is more remarkable, lambs, and afterwards throw them down again; of which a further account will be given in its place.

rocks, ſtones, and mines. Theſe I ſhall treat of according to my ability, till ſome ſuperior pen gives a more perfect account of them, to which this imperfect Eſſay may prove an inducement.

As the mountains of Norway, in general, conſiſt of rocks, intermixed with quarries of marble, free-ſtone, ſand-ſtone, ſlate, mill-ſtone, &c. which, towards the ſea, are almoſt ſtripped of earth, by the force of the winds, and in the creeks, and further in the country, are covered indeed with earth, but not more than a few yards deep, and very often leſs, one would be apt to think, that below this ſlender covering, the whole kingdom of Norway is but one ſolid ſtone, only of a different nature, figure, and height. But the error of ſuch a concluſion is evident, not only from the many deep creeks running up the country, but freſh-water lakes, ſwamps, and fens, in ſome of which, though ſounded with lines of ſeveral hundred fathoms, no bottom has ever been found. And to this may be added, that however mountainous and craggy Norway in general is thought to be, yet it affords many champaign well cultivated tracts of ſix, eight, or ten leagues, and more in extent, as Jedderen, the lordſhip of Nedenaes, Hedemark, and other parts, which are a conſiderable exception to the general rule.

## SECT. II.

The ſoil of ſeveral kinds.

The ſoils, as in other countries, are very different here, conſiſting of a black mould, ſand, loom, chalk, gravel, turff, mud, &c. In many places, when the inhabitants are digging deep for a ſpring in dry ground, all theſe kinds are found lying over each other in unequal ſtrata, and three or four ſucceſſions of them. The black mould which generally lies uppermoſt, is exceedingly fine and mellow, and fit for all ſorts of vegetables; inſomuch, that if not damaged by the cold, which ſeldom happens in the dioceſe of Bergen, the huſbandman finds his labour amply compenſated; for the ground yields five, ſix, or ſeven fold, and ſometimes even more. His harveſt conſiſts for the moſt part of barley and oats, with ſome rye, and here and there peas and buck-wheat; but of theſe I ſhall treat more fully when I come to the vegetables, or products of the earth. I have only to add here concerning the ſoil of Norway, that betwixt the mountains, and in the dioceſe of Bergen, it moſtly conſiſts of an aſſemblage of

of ſuch earth as from time to time hath rolled down with the fragments of the rocks, or been waſhed off from the mountains, and ſettled either at the foot of the mountains, or on the ſides, and by theſe acceſſions the vallies in many parts have been conſiderably raiſed. This appears evidently from one remarkable circumſtance, that the fields in the vallies are naturally formed like a camp, the regular eminences and gentle ſlopes looking like the ramparts of a fortification. A ſtrong inſtance of this, is the famous valley of Viig in Sognefiord, and Eidet in Nordfiord, where, a ſtranger, at firſt, would imagine the corn fields, as they lie raiſed above each other, to be ſo many batteries erected by art, though with ſome irregularity. All theſe terraſſes have gradually riſen from fragments of rocks, and eruptions of ſprings, which have repaired the loſs and damage ſuſtained in ſome places, by depoſiting the ſoil in other adjacent parts in theſe regular ſquares, which were thus formed by the light earth and ſand, brought thither by the courſe of the waters *.

The ſand of Norway is ſeldom of the white kind, which is at the ſame time the fineſt, but it is uſually brown or greyiſh; and that on the ſea-ſhore is of the coarſeſt, being rather particles of ſtone, as may indeed be ſaid of all grains of ſand, but particularly of theſe, their ſubſtance being ſo hard that they are not ſo eaſily diſſolved, nor fit to be ſtrewed about like the other. The little fine or white ſand we have in Bergen, is never pure, but very much mixed with powder of muſcle-ſhells, that is, with the fineſt chalky ſubſtance.

Syndfiord, Juſtedale, and ſome other parts afford a kind of ſhining ſand, as if mixed with antimony, or with iron or tin-duſt. This is moſtly uſed for writing-ſand, and as ſuch exported. Tavernier, Chap. xxiii. p. 284. of his Travels to Perſia, relates, that the Portugueſe carried ſome of this glittering ſand from Ormus to Liſbon, and at firſt made cent per cent of it; but this trade being founded on a falſe expectation, ſoon came to nothing. The

* Relative to this is the following paſſage from Baron Leibnitz's Protogæa, Sect. xxxix. pag. 71. Cætera ingentium naturæ mutationum veſtigia non nihil tangamus, habitatoribus fortaſſe antiquiora. Non illis tamen immorabimur quæ in noſtris oris expreſſa non habentur. Ægyptum Nilo, Arelatenſem agrum Rhodano deberi Ariſtoteles et Peireſkius credunt; Nannius Bataviam munus eſſe Boreæ Rhenique. Certe flumina materiam advehentia ſpoliant ſuperiores terras, friſiique quotidie noſtris detrimentis ditantur.

uſual

uſual grains of ſand, or little round ſmooth and pellucid ſtones, are ſuppoſed, by Mr. Buffon, in his Natural Hiſtory, lately publiſhed, to be only glaſs particles grinded, or a vitreous ſubſtance, the remains of the great univerſal diſſolution, and of the vitrification conſequent thereupon, which our earth appears formerly to have undergone: But on this we ſhall enlarge in the ſequel.

Clay, both yellow and blue, is to be found in the creeks, but in greater plenty every where further up the country, particularly in Hedemark, and near Chriſtiania and Drontheim, where they have lately begun to uſe it for earthen-ware, and if the ſame manufacture was carried on in other parts of the country, we might have a ſufficient ſupply without importations from abroad. It is not much uſed for bricks, as moſt of the houſes are built of timber, or of a kind of building-ſtone, which the Dutch, and other foreigners, bring hither as ballaſt, and ſell them here. However, clay will, by degrees, come to be uſed for tiling, eſpecially in the country, as the price of næver, or birch-bark, which has hitherto been the uſual covering for houſes, riſes every year, and great numbers of trees ſuffer by the uſe of it. Other finer and richer clays of a dark brown and yellow colour, and uſed by painters, are alſo met with in ſeveral places, and particularly at Ringerige, is a kind of black clay, not inferior in its fineneſs to Terra-ſigillata, and by the peaſants uſed as blacking.

Turff, both brown and black, which is the beſt, is found in many parts, and chiefly where the wiſe Creator foreſaw, that in the courſe of time it would be moſt neceſſary, namely, in the leſſer and greater Peninſula's, or Udoers (tracts of land projecting into the ſea to a conſiderable extent, and joined to the continent only by a ſmall neck) where the weſt-winds hinder the growth of woods, which are further thinned by ſhip-building, ſo that without turf, the peaſants and fiſhermen would be very much diſtreſſed, eſpecially as they are obliged to fetch the greateſt part of the timber for houſes and barks from the continent. Now, as amongſt the turf, both here and elſewhere, there are at the depth of ſome yards, branches and roots, and many very large, even ſtocks of firrs and pines, which the turpentine has preſerved, this ſhews the earth to have been gradually filled and as it were grown up from a mixture of leaves, twigs, moſs, reeds, and the like;

and the ſentiment of ſome philoſophers attributing to it a vegetative or ſelf-renewing power, by which it grows again, tho' ſlowly*, is confirmed by experience, the beſt inſtructor; for ſufficient inſtances of it appear in Denmark, Luneburg, Frieſland, Holland, England, and Picardy in France. On this occaſion, I muſt obſerve, concerning the large bodies and parts of trees ſo frequently found among this vegetating turff-ground, that they are not ſuch convincing teſtimonies of the deluge, as ſome account them; a much better proof may be drawn from other foſſils, which never could be natives of the places where they are found; of this kind, particularly, is that entire ſkeleton of a whale, accidentally found in 1687, in Tiſtedale, near Frederickſhall. It was buried with earth and ſand, at leaſt 240 feet under ground.

Skeleton of a whale found.

The ſwamps and marſhes, or Myrs, as they are called here, lie both on the ridges of the mountains, and in the vallies, at the foot of the ſteepeſt precipices; theſe, in many places, render the roads very unſafe, they being paſſable only in the drieſt ſummer months, and ſometimes not even then, unleſs a kind of cauſeway is formed over them at the public charge, with thouſands of logs and large pieces of timber laid acroſs the marſh, which are ſoon rotten. In theſe places the ground is as ſoft as dough, yielding and moving under the foot, there being, probably, beneath theſe marſhes, an abyſs of ſtanding water, which is thus weakly vaulted over. Near Læſſoe, in the dioceſe of Chriſtianſand, this timber cauſeway is carried on for near a mile, and if a horſe, or a much leſs animal, happens to make the leaſt wrong ſtep, he ſinks beyond recovery.

That there are coal-mines in Norway, and eſpecially in the dioceſe of Aggerhuus, where the late governor Ditlef Wibe, a gentleman ever attentive to the proſperity and improvement of the country, employed ſome ſkilful perſons in a ſearch of them, not altogether unſucceſsful, is what I have been informed of, but not with a certainty to advance any thing poſitive on the ſubject. The yellow, clear, and ropy ſubſtance on the ſurface of the water in

* The excellent, though not infallible philoſopher, Baron Leibnitz, falls into a miſtake, when he ſays, in his Protogæa, Sect. XLIV. pag. 82. Torfam exciſam renaſci nondum compertum eſt, etſi aquæ advehant in vicinis locis jam natam. And pag. 83, Longum eſſet expectare dum torfa renaſcatur, nec forte hoc continget, niſi in orbe alio poſt Platonicam rerum revolutionem.

the fens, which is ſaid to be an indication of coal-mines, appears in great quantities in ſeveral places. If coal could be found in thoſe provinces, which are not overſtocked with wood, it might encourage the opening of more mines, the country almoſt every where abounding in metallic mines, beſides thoſe already wrought.

## SECT. III.

Two ſorts of mountains.

From treating of the low and level ſoil of Norway, we are naturally led to the mountains and rocks, with which the greateſt part of Norway is covered. For the more accurate deſcription of theſe they muſt be divided into two ſorts; ſome being general, and extending themſelves thro' the whole length of the country, whilſt others are ſcattered about, or ſurrounded with a level country, tho' many of theſe may be conſidered as branches or excreſcences ſpringing from the roots of the former.

## SECT. IV.

The firſt ſort of theſe mountains are ſuch, as are properly called Juga Montium Concatenata, or a long continued chain of mountains; the direction of them here is not tranſverſal, but from the ſouth towards the north pole *. M. Emanuel Suedenborg, in his Miſcellanea Obſervata, p. 7 & 9, aſſigns the cauſe to the winds prevailing at the time of the deluge, which gave this poſition and figure to the matter firſt hardened: "Obſervari poteſt plerorumque horum montium dorſa a ſeptentrione verſus auſtrum tendere, &c. Extendi dorſa verſus auſtrum et boream indicio eſt, eoſdem ventos dominium tenuiſſe in oceano diluviano, qui jam in noſtro oceano." At the extremity of Finmark begins that ridge of high and rocky mountains called Koele, inhabited by the wandering Finlappers, who dwell ſometimes on the weſt-ſide of the ridge which belongs to Norway, and ſometimes on the eaſt-ſide which appertains to Sweden †. This ridge, which in its courſe goes by ſeveral names, according to the ſeveral places contiguous to it, ſeparates itſelf as it were into two arms; the firſt of which, in its progreſ-

* This is contrary to the other European chains of mountains, which in Hungary, Switzerland, France, and Spain, &c. run eaſt and weſt. But the American Cordilleros, are in the ſame direction as our northern. Buffon's Nat. Hiſt. B. 1. Article 9.

† A worthy acquaintance, who when young was a miſſionary in Finmark, informs me, that the Koelen ridge, in many places, breaks into large vallies, and conſequently is not ſo continued as further towards the ſouth; and that it ſeldom reaches above four leagues in a continued chain.

ſion, ſerves almoſt for a boundary betwixt the two aforementioned northern monarchies, and is called Rudfield, Sudefield, Skarsfield *, or more generally Sevebierg, or the Seven mountains. The modern Swediſh hiſtorian, Olaus Dalin, in his hiſtory of Sweden, Tom. I. p. 11. ſpeaks thus of the progreſs of the chain, "it procedes as it were under water from Gottenburg, to a promontory in Jutland, called the Skager Riff, and forms a bank, or mound, not ſo deep as the ſea about it, where is the beſt fiſhing in all thoſe parts." The other main arm of the Koelen chain, begins likewiſe to change its name in the dioceſe of Drontheim, where, at ſome diſtance, it likewiſe alters its poſition for the ſpace of ten Norway miles, firſt bending weſtward, as far as Roemſdal, and afterwards re-aſſuming its progreſs towards the ſouth, betwixt the dioceſes of Aggerſhuus, Bergen, and Chriſtianſand; and in the latter, about three Norway miles from Liſter, terminates in a prodigious precipice, the like of which is to be ſeen in very few parts of the world. This arm, as has been obſerved, goes under different appellations, according to the adjacent countries, the firſt is Dofrefield, near Guldbrandſdall, then follow in order Lomsfield, Sognefield, Filefield, Halnefield, Hardangerfield, Joklefield, Byglefield, Hecklefield, and, laſtly, Langfield, which laſt is likewiſe a general appellation comprehending the whole chain, as far as Dofre, and is by ſome called only Langfieldene, i. e. the long mountains. This mountain it is which divides Norway into the diſtrict called Soendenfields, i. e. the ſouth mountains, comprehending the dioceſe of Aggerſhuus, and half that of Chriſtianſand; and the diſtrict called Nordenfields, i. e. the northern mountain, tho', with reſpect to its ſituation, it might as well be called Weſtenfields, i. e. Weſthill, conſiſting of the other half of the dioceſe of Chriſtianſand, and thoſe of Bergen and Drontheim. The height and breadth of this extenſive chain are both very different, the mountain Hardanger being fourteen Norway miles over, whereas Filefield, computing from Laerdale, is ſcarce ten. Dofrefield is accounted the higheſt mountain of this country, if not of all Europe. Its perpendicular height indeed is not eaſily determinable, without calculating it by the

* Olaus Magnus, in Hiſt. Sept. Lib. II. Cap. XII. ſays, that an entrance or paſſage through it to the rocks was here cut out by the labour and induſtry of man; but this is very much doubted, and rather looked upon as a Somnium de porta Eburnea; at leaſt it is what no Norwegian ever informed me of.

Baro-

Barometer; for the levels on the ſide of the mountain, according to Peter Undalin's Deſcription of Norway, in one place reach eighteen Norway miles, and in another twelve; and the road is ſo winding, that in the winter-road, one meets no leſs than nine times with the river called Drivaae, which winds in a ſerpentine form along the ſide of the mountain. The bridges acroſs this river make a dangerous appearance, as they are laid over roaring cataracts, or waterfalls, and but indifferently faſtened to the ſteep rocks, which deters the better ſort of travellers from chuſing this road, tho' the ſhorteſt. The road over Filefield is the only one I am acquainted with from my own experience. This is a tedious aſcent, thro' many windings, from Laerdale to the ſummit of the mountain, of about ſix Norway miles and a half, which in a perpendicular height towards Laerdale, may be computed at half a Norway mile, or 9000 ells. A proof, among others, of the great elevation of this mountain above the horizon of the champaign country, is the change from heat to cold, which within a few hours becomes ſo ſenſible, that the traveller may very well ſuppoſe himſelf ſuddenly tranſported from a hot ſummer to a piercing winter. I croſſed it on the 28th of May 1749, having the day before, at my leaving Laerdale, obſerved the barley to be in ſome forwardneſs, and in the narrow vallies thereabouts, the heat was ſo ſultry that at noon I was obliged to ſhelter myſelf at Borgen chapel: But after a few hours progreſs farther up the mountain of Filefield, I found myſelf riſing as it were into the upper region of the air, towards the pure and ſubtle æther, and as much in the depth of winter as if it had been new-year's day; ſurrounded with ſnow and ice, which were the more painful to the eyes, as having ſo lately enjoyed the pleaſing verdure of the fields and woods. The ſun ſhone out very bright, but with ſo little heat, that tho' it was within three weeks of midſummer, all the waters, and particularly the freſh-water lake there, called Utreen, were frozen. I was very deſirous of returning, being diffident of the aſſurances of my guides, that the ice would bear; for as the ſnow-water lay upon it, I apprehended it might give way: However, I got over in my ſledge-chaiſe, which, as is here cuſtomary, was drawn by peaſants, and not by horſes.

Another

Another proof of the great height of this mountain, is the extenſive proſpect from it, in clear weather; for from Soeltind, a rock ſtanding in the middle of the road, I had a view of the cataract of the river Bang, in Valders, a diſtance of about twelve Norway, or fifteen Daniſh miles, but on the other ſide my eye reached beyond Hallingdale, on the borders of Waas, conſequently the creſt of this mountain affords a proſpect of thirty Daniſh or German miles. Another proof of the prodigious height of this mountain, is, that it cauſes a very ſenſible difference, in wind and weather, betwixt the north and ſouth ſide, of which I have already obſerved in another place, that the inhabitants on this ſide the mountain ſeldom have the ſame weather or air, as thoſe beyond it, the clouds, in ſtriking againſt the mountain, being repelled. Hence alſo it is, that the winds, which in the dioceſe of Aggerſhuus cauſe fair weather, in that of Bergen bring rain, and ſo vice verſa.

The higheſt parts of this whole chain of mountains are every where ſo ſmooth and level, that if they were not conſtantly covered with ſnow, carriages might travel much eaſier than in the lower parts, eſpecially on the mountain near Hardanger, over which lies the road to Kongſberg, along which road large herds of cattle are driven, and great quantities of goods carried. But the utmoſt caution is neceſſary here, on account of the large chaſms in the ſnow, which hath lain there before the memory of man, and is conſolidated; theſe chaſms, in winter, are covered with looſe ſnow, and many perſons not being aware of them, have irrecoverably ſunk into an abyſs, from whence the only chance of an eſcape, is thro' holes made by the birds for their retreat*; therefore part of the mountain towards Quenherret, being frequented by fowlers and ſportſmen, is therefore called Fuglefang, i. e. the place for bird-catching. Peter Undalin, in his Deſcription of Norway, p. 75, ſays, that all travelling over this mountain is prohibited, except from the invention of the croſs, which is the third of May, to St. Bartholomew. Over Filefield, which is the poſt-road, and the road for the king's

* Such chaſms in the ſnow are alſo ſeen in the mountains of Switzerland: "Il ſe trouve en divers endroits des montagnes de glace, &c. Les allemans les appellent Gletſcher nous les appellons des glacieres, &c. Il arrive quelques fois qu'elles ſe fendent de haut en bas, ce qui fait un bruit horrible. Souvent la neige couvre tellement ces fentes que les voyageurs ne les decouvrant points y tombent et periſſent." Delices de la Suiſſe, Tom. 1. p. 23.

carriages *, the way is marked all along with poſts, at two or three hundred paces diſtance, that in ſnowy or dark weather, the traveller may not loſe himſelf in theſe deſart wilds, where no living creature is to be met with, except here and there a few rain-deer, and which cannot be conſtantly inhabited, unleſs by Finlappers, who, as their dwelling is among the Koelen chain in Nordland, and Finmark, 100 miles farther north, may live very commodiouſly here. In the valley called Smiddedal, there were formerly iron-works, but they have long ſince been diſcontinued, ſufficient quantities of iron-ore having been found in other more convenient places; for beſides the ſcarcity of birch and alder, the extreme cold, and the ſnow, with which the ground is covered nine months of the year, ſtunt the growth of trees.

Mountain-ſtoves.

In ſome meaſure to relieve and refreſh the traveller, two mountain-ſtoves, or reſting-houſes, are maintained on Filefield at the public charge, and three on Dofrefield, and furniſhed with fire, light, and kitchen utenſils. There is but one way of avoiding this chain of mountains in the road from Sweden to Nordenfields, where it ſeems as it were interrupted by a long and deep valley, reaching from Romſdale to Guldbrandſdale; and this road many prefer in their journies from the highlands towards the ſea-coaſts, to Romſdale market with corn, butter, hides and furrs, which they barter for fiſh. It was in their march through this long defile, that a body of 1000 Scotch, ſent over in 1612, as auxiliaries to the Swedes, were, together with Sinclair their commander, put to the ſword by the peaſants of Guldbrand, who never give quarter. In theſe precipices and narrow paſſes conſiſt the beſt fortifications of Norway, and to them it was owing, that in the laſt war numbers of Swedes met with the ſame fate as thoſe Scotch; particularly, in the hollow-way near Krogkoven, where 200 men were cut off by lieutenant Cocheron, aſſiſted by the peaſants.

* At a ſmall diſtance from the road is a chapel called St. Thomas's, one of the Votive-churches, as they are called, it having been an ancient cuſtom, in ſickneſs, or any other diſtreſs, to vow an offering there. There is ſtill a ſermon once a year, on the Viſitation of the Bleſſed Virgin, which inſtitution poſſibly aroſe from the hiſtory of this day, that Mary was gone early upon the mountain. Some ſuperſtitious, tho' poſſibly, well meaning people, reſort hither with their offerings, in diſcharge of their vows; whilſt others make the journey, as the miniſter complained, a pretence for carouſals, aſſignations, and all manner of licentiouſneſs and diſorders.

SECT.

## SECT. V.

To the other claſs of mountains, according to my former diviſion, belong thoſe which ſtand ſingle, and are diſperſed over the country, though they may in effect be conſidered as branches or ſhoots ſpringing from the extended roots of the chains. Theſe, likewiſe, are generally long in their form, and, like the others, ſtretch away from north to ſouth, but with fruitful vales betwixt them, watered with convenient rivers, by which the floats of timber are conveyed to the ſea-ſide for exportation. The inhabitants find theſe little mountains much more convenient for dwelling, they being exceedingly fruitful, the ſides of them covered with fields and woods, whilſt their ſummits afford plenty of paſture for the cattle and wild beaſts; beſides which, their bowels are treaſures of ſilver, copper, iron, and other metals, which, both here and in Sweden, are lodged in the ſmaller, and not in thoſe vaſt mountains; certainly a gracious diſpoſition of the Creator, to facilitate the labour of mining. Tind and Gule in Tellemark, are ſaid to be the higheſt mountains in that part, called Soendenfields. The dioceſe of Bergen, unqueſtionably, derives its name (which ſignifies hills) from the height and great number of this claſs of mountains, which are chiefly among the creeks, and on the ſea-coaſt, and of theſe Siken, Ulrich, and Lyderhoorn, are the higheſt in this dioceſe, though Meldiſk in Roſendale, Smoer-ſtak in Hougſgield, Alden, or the horſe in Sundfiord, Hornel in Nordfiord, Sneehorn and Skopſhorne on Sundmoer, Romdalſhorn, and others too many to be here enumerated, are more diſtinguiſhed by their height*. The perpendicular height of theſe ſteep mountains, according to appearance, and the report of the people living near them, may be computed at betwixt 9 or 1200 yards, conſequently they are higher, than if ten common church-ſteeples were placed one over the other. Strabo thinks the meaſure of the higheſt mountains in the whole world to be 30 ſtadia; Kircher, 43; Pliny extends it to 400, and Riccioli to 512; but M.

Many leſſer ſingle mountains in all the provinces.

* It is obſervable, that as many northern mountains are from their great height called Horn, ſome of the moſt diſtinguiſhed mountains in Switzerland bear the ſame appellation, as Schreckhorn, Wetterhorn, Roemiſchhorn, Buchhorn, &c. which ſhews mankind to agree univerſally in their images and metaphors, even where they have no communication with each other.

Scheu-

Scheuchzer, in a particular tract, ſhews this meaſure to be vaſtly exaggerated.

Philoſophical Tranſactions, Vol. 35, N° 1.

The height of the higheſt mountains in Switzerland, which Julius Cæſar terms, ſummas alpes, is according to his conjecture, no more than 987 ells. Floeyfield, in the neighbourhood of Bergen, which, however, I do not imagine to be half ſo high as Hornel or Sneehorn on Sundmore, was by a trigonometrical menſuration performed laſt winter, found to be 200 fathom, or 600 ells high; conſequently, Ulrich, which ſtands cloſe by it, cannot be leſs than 800 ells.

Some of theſe mountains are peculiarly remarkable for their figure and appearance. On the left hand, ſailing up Joering creek, one ſees ſuch a groupe of creſts of mountains, as reſembles the proſpect of a large city, with towers and old gothick edifices, and ſome of them being continually covered with ſnow, whilſt the chaſms in others make a way for the light to penetrate, the proſpect fills a ſtranger with aſtoniſhment. Not far from thence, in the pariſh of Oerſkoug, is the mountain called Skopſhorn, of which the mariners and fiſhermen have a view at 16 leagues diſtance, when they have loſt ſight of the reſt. On the higheſt creſt of this mountain, it has the appearance of a complete well-built fort, or old caſtle, with regular walls and baſtions. It is an old tradition, that a girl who was attending a flock or herd, for a wager climbed up to the top, and according to agreement, there blew her horn, but was never ſeen after; upon which, her relations, according to an ancient ſuperſtition, imagined ſhe had fallen into the hands of the pretended ſubterraneous inhabitants of the mountains. Perhaps the truth is, that the girl was not ſo fortunate in coming down as in getting up, and that ſhe fell into ſome cavity, where her body never could be diſcovered.

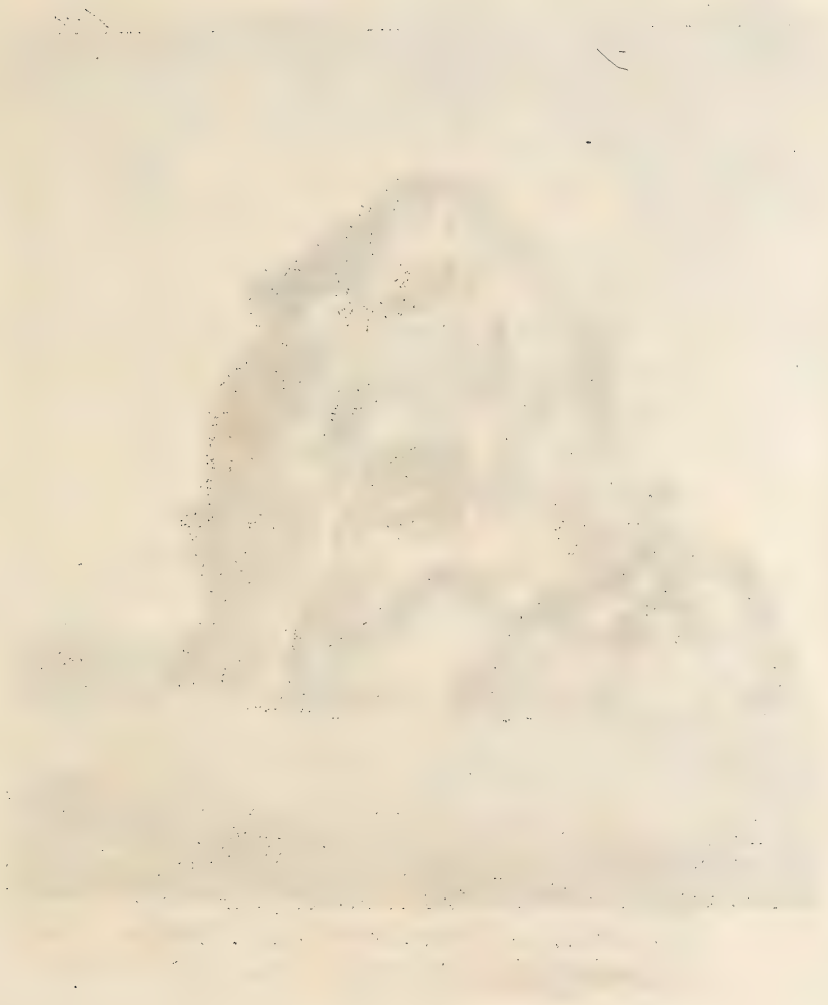
See plate 11.

Near Alſtahoug, in the diſtrict of Helgeland, is a range of mountains of a very ſingular aſpect, having ſeven high pinnacles, or creſts, known by the appellation of the Seven Siſters, and which are diſcernible ſixteen miles off at ſea. A friend of mine, who ventured to the top of the higheſt of theſe creſts, thinks their perpendicular height to be ſomething above a quarter of a league *.

The Seven Siſters.

* This appears a very extraordinary height, for one of theſe ſeparate hills, which have always been accounted but ſmall in compariſon of thoſe of Dofre and File. I have beſides been informed by ſeveral maritime perſons, that towards the north, the height of the mountains, immediately beyond Sundmoer and Nordmoer, decreaſes, as it increaſes after paſſing Stavanger, and approaching towards Bergen.

*A View of the Mountain of the Seven Sisters near Elstaboug.*



2 The Rock of Torg-Hatten in Norway.

In the ſame diſtrict ſouthward is the noted mountain of Torghatten, ſo called from the likeneſs of its top to a man's head with the hat on, under which appears a ſingle eye, which is formed by an aperture, paſſable throughout, an hundred and fifty ells in height, and three thouſand in length, thro' which the ſun may be ſeen; it likewiſe affords a coarſe kind of agate, but which will admit of a poliſh. On the top of this mountain is a piece of water, or a reſervoir, of the dimenſions of a moderate fiſh-pond. The rain-water, which gathers there, trickles down the mountain thro' fiſſures and cracks on its ſide. In the lower part of this mountain is alſo a cave, full of rugged windings. A line of four hundred fathom, being tried out of curioſity, to meaſure this hiatus, did not reach the bottom; and it was thought too dangerous to proceed further.

The mountain of Torghatten. See plate III.

## SECT. VI.

Such ſecret paſſages, and wonderful caverns in the mountains, are far from being uncommon here. At Herroe in Sundmoer, I heard much talk, from the common people, of a cavern called Dolſteen, and, as they are apt to magnify all ſuch things by their own imaginations, they conceit that it reaches under the ſea, all along to Scotland. I deſired the two miniſters of the place perſonally to inform themſelves of the nature of it, and they accordingly ſent me the following written account.

Deep and long cavities, and as it were ſecret paſſages in ſome mountains, and conjectures on the origin of them.

"Purſuant to our promiſe of taking a view of the cavern in the mountain of Dolſteen, we went thither on the 16th of July 1750; its entrance was the height of a full-grown man, and it is two fathoms in breadth; but we immediately found it to increaſe in both dimenſions, even higher and wider than Herroe church. The ſides were perpendicular, like the wall of a houſe, riſing into a kind of vaulted roof. It ſtretched itſelf S. W. and N. E. till about the middle, where we met with a deſcent like the ſteps of ſtairs, and there it inclines more to the eaſt, but this deflection is not above three or four fathom long, when it again falls into its north-eaſt direction. On each ſide, at the bottom of theſe ſteps, was as it were a bank of clay, on which we reſted ourſelves, and at the end of theſe banks, likewiſe on each ſide, was a kind of door with an oval top, but upon viewing it with our

Cavern in Dolſteen.

lights, we found it to be but half an ell lower than the other part of the mountain. Hitherto the height and breadth continued as before; but now it began to contract itſelf, and at the ſame time to deſcend lower. There we could hear the daſhing of the waves, and the ſea was at leaſt an equal height with us, if not over our heads. Soon after we came to ſome more ſteps, but being not inclined to venture further, we threw down a ſtone, and heard its eccho for the ſpace of a minute; but whether it fell into the water, or on the dry rock, we could not diſtinguiſh. Some conjecture may be formed of the length of this cavern, from our having burned two candles in our progreſs and return."

Another remarkable inſtance of a like ſecret paſſage in a mountain, I ſhall produce from my own experience. Hearing at the parſonage of Oerſkoug, that in the diſtrict of the annexed chapelry of Strande, not far from thence, a ſtream had been found, which iſſued through a rock from the ſide of a mountain called Limur, and over it a cavern which probably followed the ſtream, but of the length of which I could procure no account; I reſolved to examine it myſelf, as on my viſitation to Nordal I was to paſs near it. I furniſhed myſelf with a tinder-box, candles, a lanthorn, and a long line to ſerve me inſtead of Ariadne's clue. My boat put me aſhore at the foot of the aforeſaid mountain of Limur. But it being extremely ſteep, we were obliged to climb with our hands as well as feet, and ſometimes were hard put to it to clear our way through the hazle and alder-buſhes. On the ſide of this laborious aſcent, we met with a rivulet, ſtreaming out, which directed us to the cavern. It is indeed ſomething wonderful, being a kind of natural conduit, formed purely by the force of the water through the ſolid rock, which was a compound maſs, moſtly conſiſting of grey pebbles, but about the conduit, of a clear grey marble with bluiſh veins; had this natural ſtructure been raiſed by human ſkill, it would have been a work of no ſmall expence, for a few paces after getting through the thicket, which almoſt hides the aperture of the cavern, one is ſurprized with a vaulted paſſage of pure marble, without the leaſt flaw or breach, but with ſeveral angles and protuberances, all ſo poliſhed, as if it had been a paſte mouldered into ſmooth globular forms. About a hundred paces forward, the paſſage continues in a ſtraight direction,

rection, then winds off to the right with aſcents and deſcents, and in ſome places growing narrower, and in others widening to double its former breadth, which, according to my admeaſurement, was about four or five ells, and the height about three; thus two perſons could go abreaſt, except that they were now and then obliged to ſtoop, and even creep, and then they felt a damp vapour like that of a burial-vault. This prevented my penetrating ſo far as I had intended. Another thing remarkable, was the terrible roaring of the waters under us, the courſe of which was what moſt excited my wonder, as over it lies a pavement of ſmooth ſtone, inclining a little like a vault on each ſide, but flat in the middle, and not above three fingers thick, with ſome ſmall crevices, through which the water may be ſeen. If it be aſked how far this covered-way reaches? I make no queſtion but its length is equal to the courſe of the ſtream, and that it has been produced by the falling of the water, which in length of time, has perforated theſe rocks agreeably to the ancient maxim,

Gutta cavat lapidem, non vi, ſed ſæpe cadendo.

And this is more particularly confirmed by the many projections which have been levelled, or undulated figures, which, as I have before obſerved, are to be ſeen on the roof, and along the ſides. If it be aſked again, where is the ſpring of this ſtream? the peaſants hereabouts ſay, that on the uppermoſt ridges of the mountain, which is at leaſt a hundred fathom high, almoſt perpendicular above the cavern, there is a ſtanding-water of about a quarter of a league in circumference, and unqueſtionably formed and ſupplied by the frequent acceſſion of the rain, and the melted ſnow from the other parts of the mountain. It is no difficult matter to judge how the uppermoſt dry vault comes to be of ſuch a height over the channel of the river, by which it is cauſed; for the cavity in its beginning could not have been ſo high, but by length of time, the ſtream, of which the upper vault was then the bed, penetrated to its preſent depth, and perforating the mountain, the particles which it detached, as ſand and gravel, ſettled on the ground, forming as it were a ſmall and level pavement, which is now a cover to that ſtream, of which it had been the bed. I am the more confirmed in theſe thoughts, by a ſecond view I took of this

this cavern ſome days after, on my return from Nordal, when I ventured further in, though not ſo far as two men whom I had with me. We then perceived, by the help of a lanthorn, through an aperture under our feet, that the ſtream had made itſelf another flat and ſmooth bed of little ſtones, or a gravelly bottom, like that under which it now runs, conſequently in time, it will likewiſe penetrate through this new vault, which will then become its roof, and thus in another bottom, proceed to lay the foundations of another new vault:

Tantum ævi longinqua valet mutare vetuſtas.

However eaſily thoſe caverns, through which there is a watercourſe *, may be accounted for, yet it is more difficult to explain the origin of the many dry caverns and ſecret paſſages in the rocks, like that of Dolſteen, of which more inſtances might upon inquiry be found in other mountains. The opinion that carries the greateſt weight with me, is that of Woodward, in his Theory of the Earth, p. 85, that the whole maſs of terreſtrial matter, after its diſſolution by the deluge, and its ſubſequent reunion, was ſoon after, when dried and hardened, by ſome ſecret cauſe in the earth itſelf (a univerſal earthquake, or the like) again ſeparated and thrown into ſuch confuſion, that the ſeveral ſtrata, or layers, ſunk in ſome places, and roſe in others: this naturally gave the ſurface of the earth the appearance of a crackt or ſhattered building, with many chaſms betwixt its ruins, till at length the earth ſhall be entirely levelled.

## SECT. VII.

Effects of the deluge in the diſſolution and ſoftening of the hardeſt bodies, in which their former ſoftneſs is plainly diſcernible.

However true it be that this opinion of Woodward deſerves the preference, beyond any of the conjectures of Burnet, Whiſton, or other theoriſts on the effects of the deluge, yet it has not been exempt from oppoſition, and particularly is combated by Elias Camerarius, and but lately by Mr. Buffon. My reaſon for adopting it here, is, that of all others, it moſt facilitates the diſcovery of the origin, not only of the cavities, but of the mountains themſelves: He does not deny, as Burnet does, the exiſtence of mountains and hills before the deluge, but is of opinion, that they

* Of this kind is that ſo remarkable cavern in the Peak in Derbyſhire.

were

were all diſſolved, and as it were liquified, and that the whole terreſtrial maſs, with its detached and intermingled parts, at laſt came to a coalition above the abyſs, in the form of a convex vault, one ſtratum above another, ſtone, earth, ſand, chalk, and other ſubſtances, ſubſiding quicker or ſlower, according to their ſpecific gravities; the ſeveral ſubſtances thus obtaining their collected ſtrata, the outward ſhell of the earth was ſmooth and level; and Burnet, in his Theory of the Earth, holds this to have been the ſtate of things from the creation to the flood, when the water broke up and demoliſhed the ſmooth ſhell, and this diſruption mingling different bodies, threw all things into their preſent diſorder; though the wiſdom of a divine œconomy be ſtill univerſally conſpicuous. Woodward, in anſwer to the queſtion, how the ſurface of the globe, which, according to his opinion, was rendered ſmooth by the deluge, fell into its preſent irregularity? how the middle or loweſt ſtrata were thrown uppermoſt, and ſuch a general confuſion prevailed? ſuppoſes, that immediately after the deluge, the abovementioned great change and diſſolution * took place, by which ſome detached ſtrata ſtood with one end in the air, and the other ſubmerged, that the place of the depreſſed was filled by the elevation of parts or fragments of different layers. Tho' this be but an hypotheſis, yet it appears to me the only one, which accounts for and illuſtrates what I have moſt wondered at, in my ſpeculations on the ſtupendous ſtructure of our northern rocks, and particularly the ſtrata of their different parts. In theſe rocks, which are compoſed of maſſes very different in colour and figure, it is plainly ſeen that the ſubſtances thereof have been as it were liquified, and afterwards ſubſided ſtratum ſuper ſtratum, yet not always horizontal, according to the laws of motion and gravity, but rather in general, oblique, or in various, and in ſome places, even in perpendicular directions. The cauſe of this poſition cannot be cleared up without admitting the aforeſaid opinion of Woodward, at leaſt till ſome more rati-

* Several cauſes of this may be alledged, but in my opinion this appears the moſt plauſible. As a new wall, if the foundation gives way ever ſo little, cracks, and even ſinks and falls to ruin; the like muſt have happened ſoon after the flood, when this new mixture came to be dried; and this ſiccity muſt occaſion crevices and apertures in the lower part, and conſequently in its upper ſurface, which neceſſarily followed the ſinking foundation, upon the water diſcharging itſelf from the other parts into the ocean.

onal ſolution ſhall be hit upon. What I moſt lament, is, that this learned and ingenious writer has not fulfilled his promiſe ſo often repeated, of demonſtrating both the poſſibility and reality of his ſeveral hypotheſes, and confirming them by experiments. He had for this end projected a large work, of which his Theory of the Earth was to be only introductory. The chief objection, which I could have wiſhed to have ſeen anſwered by him, relates to the hard ſubſtance of ſtones, which he takes for granted to have been alſo diſſolved and liquified.

Conjecture on the diſſolution of the earth.

I aſk, by what means this liquefaction was wrought at the time of the deluge? if recourſe be had to the ſuppoſed central fire, from which the globe derives its levity, &c. and it be ſaid that this by coction could diſſolve the hardeſt quarries of marble, (the veins and ſtreaks whereof ſufficiently ſhew its former ſoftneſs, and the loco-motion of its parts, not to mention the heterogeneous things found in it) then Noah and the animals in the ark muſt have ſuffered, unleſs we take the liberty of forming a new hypotheſis, that this coction was not univerſal at once, but affected only a certain part of the globe, and certain tracts of its ſurface *: Strange and novel as it may appear, to aſſign ſuch a vehement heat to the water of the deluge, yet this was a very ancient tradition, if we pay any regard to the words attributed to the devout Pionius, who ſuffered martyrdom in the year 250, under the emperor Decius, and among other things ſpoke thus to his unbelieving perſecutors, "Ye yourſelves, from your old traditions, acknowledge that the deluge of Noah, whom you call Deucalion, was mingled with fire, yet do you but half underſtand the real truth of this matter." Now though no great ſtreſs be to be laid thereon, yet is this conjecture far from being ſo improbable as that of Burnet, who makes the chaos of our globe to have been the remains or aſhes of a conſumed and vitrified comet, which by the creation, acquired a new life, form, and diſpoſition †.

But

* Who knows whether any volcanoes exiſted before the deluge, eſpecially, whether it did not previouſly accumulate vegetable and animal fragments from the reſinous ſlime of the bottom of the ſea, or at leaſt great quantities of fuel, to the ſulphureous and otherwiſe inexhauſtible ore already depoſited there? Who at leaſt will diſpute the probability that the ſea, furniſhes fuel to theſe dreadful and inceſſant ſubterraneous fires, all volcanoes being near the ſea. D. Joh. Friederich Henkel's Pyritologia, Cap. v. p. 308. ſeq.

† The celebrated naturaliſt Mr. Buffon, in ſeveral parts of Tom. I. of his Natural Hiſtory, in ſome meaſure cloſes with this hypotheſis, tho' he differs very much from him

But whenever this fuſion happened, or whether the Almighty made uſe of it as a means or not, or whatever means he choſe for that end, for I do not concern myſelf with thoſe chimeras; yet nature and experience ſpeak ſufficiently plain to the point, and ſhew firſt * the poſſibility of it, no kind of ſtone whatever, whether pebble, marble, or flint, having ever been of ſuch a hardneſs, as not to be capable of being reſolved into its moſt minute particles, melted, liquified, and again vitrified, eſpecially by a good burning-glaſs †. In the next place, the reality of the matter appears beyond all doubt, to thoſe who have an opportunity of viewing the various figures and colours of the ſtones, in the rocks and mountains, ſome ignited, others ſtriated, and many heterogeneous bodies intermixed with them, of which Norway affords multitudes, eſpecially on the ſea-coaſt. If we conſider theſe attentively, they manifeſtly evidence, that anciently their matter was ſoft and liquid, but again indurated, and that after this induration, or petrification, they were in many places again detached and confounded, as if hewed through, broken, ſplit, and raiſed from their firſt horizontal ſtate to an oblique, and in ſome parts a perpendicular poſition. If the before-mentioned profound theoriſts had taken a view of this country, it would have furniſhed them, far beyond any other, with the ſtrongeſt experimental proofs and illuſtrations of their hypotheſes ‡. I ſhall, however, adduce ſome remarkable proofs from the heterogeneous ſolid bodies, ſo frequently found entombed as it were in other ſolid bodies,

Wonderful mixture in the mountains.

him in the circumſtances. He turns our globe into a fluid or liquified matter, ſhorn from the ſun by a comet, which mixed itſelf with it. Could this have been expected from a man who treats all hypotheſes with the utmoſt contempt?

* Incendiis et inundationibus varie transformata ſunt corpora, et quæ nunc opaca et ſicca cernimus, arſiſſe initio, mox aquis hauſta fuiſſe, tandemque ſecretis elementis in præſentem vultum emerſiſſe, credi par eſt. Omnis ex fuſione ſcoriâ vitri eſt genus, ſcoriæ autem aſſimilari debuit cruſta, quæ fuſam globi materiam, velut in metalli furno obtexit, induruitque poſt fuſionem.——Ipſa magna telluris oſſa, nudæque illæ rupes atque immortales ſilices, cum tota fere in vitrum abeant, quid niſi concreta ſunt ex fuſis olim corporibus, &c. Leibnitz Protogæa, § III. p. 3, 4.

† Mr. Becher, in his Phyſic. Subterran. ſhews, that the hardeſt ſtones are diſſoluble by water and fire: "Solius ignis et aquæ ope, ſpeciali experimento, duriſſimos quoſque lapides in mucorem reſolvo, qui deſtillatus ſubtilem ſpiritum exhibet." Again: "Eſt etiam certa methodus, ſolius aquæ communis ope, ſilices et arenam in liquorem viſcoſum, eundemque in ſal viride convertendi et hoc in oleum rubicundum." This laſt method, which does not require the uſe of fire, is moſt agreeable to Woodward's Syſtem, which on that account, among others, appears the moſt eligible.

‡ That all ſtones were anciently a ſoft or ſlimy paſte, is admitted as a tried and unqueſtionable certainty, in the Memoires de l'Academie Royale, ad A. 1716, p. 14.

See plate IV. (ſolida intra ſolida.) In the diſtrict of Evindvig, ſix leagues north of Bergen, is a place called Steneſund, where the mountain, for half a quarter of a league, abounds with ſuch petrified bodies, as are ſought for in the cabinets of vertuoſos; many kinds of Cornua Hammonis, large and ſmall ſnakes, muſcles, worms, inſects, and many others. This cannot be called a Luſus naturæ, which expreſſion, in this ſenſe, is rather a Luſus poeticus, and amounts only to a paltry evaſion, invented by perſons who are diſpoſed to deny what is undeniable. All theſe figures appear there as if they had been impreſſed into a paſte, or dough, and no rational inquirer can entertain any doubt, that the rock was as ſoft as dough, or paſte, when firſt theſe bodies were intermixed with it. I ſhall paſs over many leſſer examples of this kind, ſuch as St. Olave's ſerpent in Nordal creek, which, as far as it concerns the ſaint, is fabulous, the monks having made uſe of it to attribute to St. Olave the miracle of encountering this huge ſerpent, and throwing it up againſt the place where it is now ſeen; but that it has hung there ever ſince the deluge, is not incredible, unleſs its dimenſions of many fathoms render it ſo. But this doubt will likewiſe vaniſh, when I come in order, to ſpeak of the northern ſea-reptiles, and other extraordinary ſea-animals. In the quarry of marble near Muſterhaun, ſeven Norway miles ſouth of Bergen, in the ſurface of the rock, which is as it were the outward cruſt of the marble, or a porous ſlime, called Dogſtein, we ſee ſeveral ſmall round holes, like thoſe obſervable in tallow, or in wax, when congealing after fuſion; and that the whole maſs of this quarry, together with its veins, were formerly in that ſtate, appears to me unqueſtionable from the anſwer of one of the workmen, when I aſked him, if he had never met in the marble with ſomething elſe, or ſome ſubſtance which had the appearance of a different ſubſtance? his anſwer was, "This happens very ſeldom, yet both myſelf, and others of my trade, have ſometimes met with it, and we have found in the middle of blocks of marble, ſnakes, muſcles, ſand, ſtone, and other ſuch things, ſo incloſed in on all ſides by the marble, as if they belonged to it, although they immediately looſen and drop out as a foreign ſubſtance. When this happens, it is uſually followed by ſuch a violent ſtench, as over-powers us, unleſs we turn immediately aſide from it." This laſt circumſtance

I im-

The Mountain near Stone Sund

I impute to the long confinement of the air. In my little collection of northern and other natural curioſities I have ſeveral ſuch petrified pieces, which exhibit ſolidum in ſolido, and other indications of a ſudden induration of theſe formerly fluid ſubſtances, by which fiſhes, worms, ſnakes, and other creatures have been incloſed in ſtones, as we meet with inſects and the like in amber *.

Inſtead of dwelling on theſe things I ſhall corroborate the matter by a conjecture of my own, relating to three cavities in a rock in the diſtrict of Rake, three quarters of a Norway mile from Fredericſhall. Theſe cavities at their entrance are round, and each not above two ells in circumference. Two of them are not very deep, and ſo are not particularly remarkable, as they might have been formed by human hands with inſtruments; but the third cavity, on that account, deſerves the more admiration from the curious; for tho' not wider than the other two, and ſo ſmooth and regular, that it might be miſtaken for a work of art, yet it would be abſurd to ſuppoſe this, on account of its unfathomable depth; for when in order to form a computation of it, a ſmall ſtone is dropped down, the echo does not in leſs than two minutes give any room to conclude that the ſtone has reached the bottom; and the ſound it returns is quite melodious and pleaſant, not unlike that of a bell. This profound cavity, which is too narrow to receive a human body, much leſs to allow room for the motion of the hands, could not therefore poſſibly have been dug or bored by human art, conſequently it muſt be of equal date with the world itſelf, or, which indeed is moſt probable, it was formed by the deluge, and poſſibly in this manner; the ſubſtance of the rocks being ſuppoſed ſoft and impreſſible like a paſte, a round ſtone, previouſly indurated, might fall on it from ſome eminence, and by its own weight force a paſſage quite through. And if the two other cavities, which are not very deep, proceeded from a ſimilar cauſe, the ſtones which fell in there muſt have been lighter, or have met with a more inſpiſſated or harder matter.

* I am not little pleaſed that Mr. Buffon has found the like, and other adventitious bodies in marble and chalk. Natural Hiſt. Tom. I. Art. VIII.

## SECT. VIII.

The origin of all mountains, rocks, and leſſer ſtones, deduced from the premiſes.

This poſition being eſtabliſhed, it opens a way to an eaſy explanation of the origin, both of the rocks, mountains, and hills, after the firſt plane had been formed by the deluge. The hills, of which few here are of ſuch dimenſions as to be claſſed among the mountains, might very eaſily be aggregated by the mere force of the water, but the rocky mountains being of a denſer ſubſtance, ſeem to have been elevated from beneath, in a convex form, by a violent force of ſubterraneous wind, water, and fire, heaving them up, and ſcattering them about in ſo many protuberances *; and if this happened, before the ſubſtance of the ſtones became indurated and fixed, then the external wind did likewiſe, according to the conjecture before quoted, from M. Swedenburg's Obſervations, leave ſo many veſtiges of its violence both in the extent and figure of them. This accounts, unqueſtionably, for the innumerable fiſſures, diſruptions, and chaſms, which appear like ſo many mountains ſawn aſunder, acroſs or lengthways †. And hence many ſuch apertures in the mountains are filled with a ſlimy matter, of a ſubſequent induration, and by the country-people called Hejeitel. This projects in a range of about an ell, or half an ell in breadth, betwixt the other lapideous ſtrata, and throughout the whole length or bulk of the mountain, which thus from the variety of its colours makes a very pleaſing appearance. Of theſe Hejeitels, or ſeparate veins, ſome conſiſt of marble, or alabaſter, ſome of agate, and ſome of other white, red, blue, or brown kind of ſtones, which, eſpecially towards the ſea-coaſt, where the rocks are bare, form many curious variegations. Hence likewiſe remain on the ſurface the many detached blocks and

* Scio quoſdam ſuſpicari intumuiſſe aliquando terram ab erumpente ſpiritu, ſurrexiſſe montes ex planitie, erupiſſe inſulas ex mari, qualis apud Cedrenum in hiſtoria miſcella memoratur inſula nata ſub Leone iconomacho.—Ego etiam facile admittam initio, cum liquida eſſet maſſa globi terræ, luctante ſpiritu ſuperficiem varie intumuiſſe, unde illi mox indureſcenti primæva inæqualitas; neque etiam diffiteor, firmatis licet rebus, terræ motu aliquando vel ignivoma eructatione, monticulum factum. Leibnitz Protogæa, Sect. XXII. p. 36. ſeq.

† Mr. Buffon, Part I. p. 64, according to his ſyſtem, aſſigns the following cauſe of the perpendicular fiſſures and chaſms in the mountains; that the waters gradually ſubſiding, and the paſte of the rocks being dried, the ſhafts thus contracted, neceſſarily ſeparate, and leave an aperture betwixt them, as the like daily happens when mortar, ſtarch, &c. harden. Whereas the horizontal rents in mountains, which are much fewer, run according to the ſeveral ſtrata of the ſubſtances, which are obſerved to lie over each other, like the leaves of a book.

frag-

fragments, like lumps of mortar, or a ſoft paſte, ſcattered not only in the vallies and creeks, where they are called Sciſſars and Flies, but alſo on the tops of the higheſt mountains; many ſuch being found here of the bulk of a common houſe, conſequently too ponderous to have been raiſed to ſuch a height by the hands of men, and beſides of no viſible uſe.

Stones not vegetative.

This likewiſe is the origin of moſt of thoſe pebbles, which are found ſcattered in all parts of the globe, and which by length of time become ſomewhat ſmooth and even. I ſay moſt of them, and allow that ſome ſandy ſtones may be ſaid to grow, and from this cauſe, that a ſuperficial layer of ſand or clay was indurated by the ſun. But that ſtones in general, eſpecially the hard pebbles, grow, and conſequently are endued with a vegetative life, or internal power to imbibe their nouriſhment from the earth, this is certainly one of the moſt abſurd notions that ever was received among judicious men, and eſpecially in an age in which the cauſes of things are ſo minutely and accurately inveſtigated. If after clearing a piece of ground of the ſmall ſtones, there appears to be a ſucceſſion of them, this is owing to a hard froſt within the earth, and the ſwelling of the earth by the enſuing thaws, whereby, every year, the ſtones are carried up to the ſurface. That mountain-cryſtals, and poſſibly more valuable gems, may grow like ſap or juices, which gradually become tinged with the colours of the minerals, and according to the quality and arrangement of the ſaline particles, concrete and ſhoot into cones, I am very willing to admit; likewiſe, that the water carrying away ſome lapideous particles, here and there in the cavities of the mountains, reduces them to a paſte, which afterwards being dropped, remains ſuſpended like icicles; and there forms what is therefore called the Drop-ſtone or Stalactites.

## SECT. IX.

The inconveniencies and detriment to Norway from ſo many rocks and mountains.

Before I take my leave of the mountains, and particularly of our Norvegian rocks, I muſt, agreeably to my purpoſe, mention ſomething further to the praiſe of the great Creator, and to incline the people of Norway to be gratefully contented with the habitation which God has aſſigned them. I previouſly grant, as all

all earthly enjoyments are mixed with bitters, according to the poet's ſaying,

Omnis commoditas ſua fert incommoda ſecum;

ſo the inhabitants of a mountainous country may in general be ſaid to labour under more inconveniencies than others; as the country, in the firſt place, is leſs fruitful, the arable ground being but little in compariſon with the waſtes and deſerts. The diſproportion in many provinces, eſpecially thoſe which are entirely over-run with mountains, betwixt their produce and the inhabitants is very great, they being under a neceſſity of procuring one half of their ſuſtenance out of the ſea. In the next place, the villages cannot be ſo large, compact, and convenient as in other parts; but the houſes lie ſcattered among the vallies, generally at half or a quarter of a league diſtance, although up the country the farm-houſes are both larger, and ſtand thicker than in the vallies of Bergen, where they are the ſmaller, from the vaſt extent of the mountains. In ſome places, as in the creeks in Ulland and Nordal, the peaſants houſes ſtand ſo high, and on the edge of ſuch a ſteep precipice, that ladders are fixed to climb up to them; ſo that when a prieſt is ſent for, who is unpractiſed in the road, he riſks his life, and chiefly in winter when it is ſlippery. In ſuch places a corps muſt be let down with ropes, or be brought on men's backs, before it is laid in the coffin. The mail likewiſe in winter muſt, at ſome diſtance from Bergen, be drawn up over the ſteepeſt mountains. Under this head of inconveniences we may alſo reckon the very difficult roads, extremely ſo to the day-labourers, but particularly to travellers, who cannot without terror paſs ſeveral places even in the king's road, over the ſides of ſteep and craggy mountains, and on ways which are either ſhored up or ſuſpended by iron bolts faſtened in the mountains, and tho' not above the breadth of a foot-path, without any rails on the ſide, as indeed it is impoſſible to fix any; not to mention the ſudden riſing of the rivers, which they muſt either wade thro', or croſs over on ruinous bridges *. In this dioceſe the bridges are not

* In the narrow paſs of Naeroe, leading to Waas, is a very remarkable piece of antiquity, being a way ſuſpended on iron bolts, which the famous king Suerre, in the year 1200, or above ſix hundred years ago, cauſed to be faſtened into the rocks,

not built of any extraordinary ſtrength, being uſed only by foot-paſſengers, or horſemen; for there is no road for carts, and many peaſants here who have not ſo much as ſeen a cart, when they come to Bergen, look with amazement at it, as a curious machine. A fourth evil reſulting from the mountains, and eſpecially in this province, is the ſhelter their cavities and clefts afford to wild beaſts of prey, which renders it difficult to extirpate them. It is not eaſy to deſcribe what havock lynxes, foxes, bears, and eſpecially wolves, make among the cattle, the goats, hares, and other uſeful animals. In the chapter of the wild beaſts we ſhall give a more particular account of this. Another very pernicious evil is, that the cattle, goats, &c. belonging to the peaſants, often fall down the precipices, and are deſtroyed. Sometimes they make a falſe ſtep into a projection called a mountain-hammer, where they can neither aſcend nor deſcend; on this occaſion a peaſant cheerfully ventures his life for a ſheep or goat; and deſcending from the top of a mountain by a rope of ſome hundred fathom, he ſlings his body on a croſs-ſtick, till he can ſet his foot on the place where his goat is, when he faſtens it to the rope to be drawn up along with himſelf. But the moſt amazing circumſtance is, that he runs this riſk with the help only of one ſingle perſon, who holds the end of the rope, or faſtens it to a ſtone, if there be one at hand. There are inſtances of the aſſiſtant himſelf having been dragged down, and ſacrificing his life in fidelity to his friend, on which occaſion both have periſhed *. The ſixth, and

to make a paſſage for his army, doubtleſs for his cavalry, which could not poſſibly have paſſed it, had they not been Norway horſes, theſe being accuſtomed to climb the rocks as nimbly as goats. I add, that the moſt dangerous, tho' not the moſt difficult road I have met with in my ſeveral journies in Norway, is that betwixt Skogſtadt and Vang in Volders; along the freſh-water lake called Little Mios, the road on the ſide of the ſteep and high mountain, is in ſome places as narrow and confined as the narroweſt path, and if two travellers meeting in the night, do not ſee each other ſoon enough to ſtop where the road will ſuffer them to paſs, and chance to meet in the narroweſt parts, it appears to me as it does to others whom I have aſked, that they muſt ſtop ſhort, without being able to paſs by one another, or to find a turning for their horſes, or even to alight. The only reſource I can imagine in this difficulty, is, that one of them muſt endeavour to cling to ſome corner of this ſteep mountain, or be drawn up by a rope, if help be at hand, and then to throw his horſe down headlong into the lake, in order to make room for the other traveller to paſs.

* Of theſe melancholy, and not unfrequent accidents, of a man or a beaſt falling ſome hundred fathoms from the precipices, it is obſerved, that the air preſſes with ſuch force againſt the bodies thus falling, that they are not only ſuffocated and deprived of life long before they reach the ground, but their bellies burſt,

and not the leaſt danger, to which the inhabitants in this and ſome other provinces, tho' ſeldom in Oſterland, are expoſed, is, that ſometimes by a ſudden diſruption of a rock, great damages are done to the cattle, fields, and woods, and ſometimes houſes and families are involved in the deſtruction. Theſe diſruptions (called Steenſkreed) generally happen in the ſpring, when the dilation of the ſtrata of earth, occaſioned by the thaws and rains on the ſummits of the mountains, looſens ſome adjacent ſmall ſtones, which as they roll down, gradually gather more, and carry before them, or after them, ſuch heaps of ſtones, ſand and rubbiſh, that all the trees in the way are torn up, and the mountain is ſo ſtripped of all its covering, that it has the appearance of a beaten road; and if the earth chance to lie too deep for this miſchief, many deep trenches, or long and narrow vallies are formed, the ſoil of which is thrown on the contiguous fields and paſtures, which in time, tho' it requires ſome years, recover their verdure and fertility. The greateſt and moſt deſtructive fall of ſtone as well as ſnow, of which I have elſewhere made mention, happened in this dioceſe about Candlemaſs, in the year 1679, when many cultivated tracts of land were deſtroyed, ſeveral houſes demoliſhed, and, only in the diſtrict of Sundmoer, 130 ſouls periſhed, and all this as ſuddenly as in other countries by earthquakes.

There is another much more terrible, and a more extraordinary natural accident, which in ſome degree reſembles this laſt; it is diſtinguiſhed by the name of Bergrap; the mountain being as it were convulſed, gives way, ſeparates, and falls down on the country; ſometimes in ſmall pieces, and then the damage is but ſlight; but ſometimes, tho' ſeldom, entire creſts of rocks ſome hundred fathoms in length and breadth have fallen; which occaſions a violent agitation in the air, and has all the appearance of a prelude
See plate v. of a general deſtruction of the world. The veſtiges of ſuch a Bergrap, are moſt evidently to be ſeen at Steen-broe, in Laerdale, in

and their entrails immediately guſh out; which is plainly the caſe, when they happen to fall into a creek, or any other water, for all the limbs remaining whole, but the belly is burſt. The certainty of this matter throws a light upon an obſcure paſſage, eſpecially in Luther's and our Daniſh tranſlation of the Bible, where it is ſaid, Acts, chap. i. 18. *he hanged himſelf, and burſt in two, and all his bowels fell out.* On the contrary, the words are, πρηνης γενομενος ελακησε μεσος, præceps factus eſt, *falling headlong, he burſt aſunder in the midſt*, is the Engliſh tranſlation, and agrees perfectly well with the ſequel, according to the above obſervation, which in this country is but too often exemplified.

the

The Galleries a dangerous way under the Mountain Filefield.

the gallery, as it is called, where a mafs bigger than any caftle in the whole world appears to have fallen from the rock; the pieces are, fome of the bulk of a houfe, fome lefs, but all as pointed as if millions of pieces of broken glafs lay there. The river roars prodigioufly as it paffes through thefe ftupendous ruins, over which, however, a way has been laid with infinite labour, but certainly one more difficult is not to be met with throughout the world.

When fuch a Bergrap falls into a creek, or any deep water, the fragments indeed are out of fight, but their fubmerfion caufes fuch an agitation of the water, as to overflow and carry away the adjacent houfes, and even churches; of which, on the 8th of January 1731, there was a remarkable inftance in the parifh of Oerfkoug, and in the annexed parifh of Strand, on Sundmoer, where a mafs, or promontory, called Rammersfield, hanging over Nordal-creek, being undermined by the water, fuddenly fell down, whereby the water, for the fpace of two miles, fwelled with fuch force, that the church of Strand (which has fince been rebuilt on a higher fpot) though a direct half league on the other fide of the bank, was entirely overflowed, feveral barks carried up the country, many houfes deftroyed, and fome people drowned; yet the creek was fo far from being filled up, that the fifhermen fay, they find no difference in the bottom, which, thereabouts, is no lefs than 900 fathoms deep*. And in the beginning of the prefent century, fomething fimilar happened to a mountain in Julfter, which falling into a lake occafioned an inundation, whereby the neighbourhood fuftained great damages.

## SECT. X.

From thefe inconveniencies and difafters to which Norway and all mountainous countries are expofed, I proceed, on the other hand,

Conveniencies and advantages arifing from them to the inhabitants, according to the Creator's wife and bountiful defign.

* M. Hans Hiort, fuperintendant at Sundmoer, in his letter to me of the 30th of November 1750, is of opinion, that this was chiefly occafioned by the defluxions of water from a fpring on the fummit of the rock, through its clefts and fiffures; and it being then a hard froft, the ice widened the clefts and forced them afunder. I clofe with this reafon, and find it confirmed by Mr. Rohault, Princip. Traité Phyfique, Tom I. chap. XXIII. p. 201, " Si un corps dur a fes pores affez grands pour contenir beaucoup de liqueur, et fi ces pores font remplis d'eau, comme l'eau ne peut fe geler fans fe dilater, il peut arriver qu'en fe gelant elle eclatera le corps qui la renferme ?"

hand, according to promiſe, to recite the advantages of mountains; and theſe alſo are very many, and ſome very conſiderable, ſo that the kind Creator has univerſally, in ſome things, compenſated the want of others, which he has thought fit to withhold from mankind.

The firſt benefit of mountains is, that they collect the clouds and diſſolve them in rains, as I have already ſhewn; likewiſe that the maſſes of ſnow, reſervoirs, and ſprings in the mountains, ſend down large and ſmall currents of water, whereby the fields, woods, and cattle are refreſhed, and even the ſubterraneous veins of water and ſprings, which do not immediately iſſue from without the mountains, owe their origin to them, eſpecially where the veins are large and rapid, as has ſufficiently been made out by Ray, Scheuchzer, Wolff, and other naturaliſts. I would only remark here, that ſeveral level heaths remain barren and uncultivated, merely becauſe, after digging deep for ſprings, men can ſcarce procure water ſufficient for their own uſe, and have no fodder for their cattle at all. I am alſo of opinion that mountain-water is more fertilizing than common rain-water, and whether from ſaltpetre effluvia, or ſome other cauſe, has in it a particular vegetative power, as is manifeſt not only from the quickneſs of the growth, and vigor of all kinds of young trees, particularly pines, aſhes, oaks, and other trees on the ſides of mountains, where is very little earth, and ſometimes even in arid clefts, where they are known to thrive better than when planted in other parts; but the ſame is likewiſe viſible in the cultivated parts, which indeed are ſmall, but in ſuch fecundity, as both in ſtraw and grain greatly to ſurpaſs the champaign country, the marſh-lands and the like excepted. It is alſo well known, that the ſurface of the hard mountains, tho' unfit for the plough, affords large and excellent paſturages, and the property of the northern peaſants in oxen, cows, ſheep, and goats, would be reduced very low, were it not for their ſpacious range on the ſides of the mountains; not to mention that wild-fowl, and beaſts, do as well as the ſeveral hurtful animals find more refuge and food in the mountains, than in the level country. Beſides, the mountainous countries may be conſidered as the ſtore-houſes or treaſuries of providence, where are laid up, and from whence he kindly diſpenſes, according to the exigencies of the world in every

Mountains the ſtore-houſes of providence.

thoſe metals and minerals, which are become ſo indiſpenſable in human life, and the want of which, as a medium in commerce, obliges ſome nations to exchange their commodities for a ſmall bit of iron. Norway, till a century and a half ago, appears from all accounts to have wrought but few mines, conſequently, the country contained treaſures out of knowledge. Since that time, matters are ſo improved by the aſſiſtance of German miners, that the ſilver, copper, and iron mines, have produced to the amount of ſeveral millions. Olaus Magnus, would be agreeably ſurpriſed, if he were a witneſs of the increaſe of mines, both in his native country, and here, beyond what he had ever imagined; for in his time he could ſay, "Montes excelſi ſunt, ſed pro majori parte ſteriles et aridi, in quibus nil aliud pro incolarum commoditate et conſervatione gignitur, quam inexhauſta pretioſorum metallorum ubertas, qua ſatis opulenti fertileſque ſunt in omnibus vitæ neceſſariis, forſitan et ſuperfluis aliunde, ſi libet, conquirendis, unanimique robore ac viribus, ubi vis contra hæc naturæ dona intentata fuerit, defendendis. Acre enim genus hominum eſt, &c." Theſe laſt words, which may confirm the opinion, that the inhabitants of Sweden and Norway derive their natural vigour and bravery, from the proximity of theſe rocky mountains, remind me of the third advantage to be conſidered here; namely, that the mountains afford a ſhelter and defence, not only againſt the inclemencies of the weather, but likewiſe againſt invaſions. They ſerve, as has already been ſaid, for boundaries betwixt Norway and Sweden; for from Kolen, a long chain of mountains, of an amazing height, ſeparates theſe two kingdoms. But the experience of all ages ſhews the many mountainous tracts in the country to be natural fortreſſes; for the Norway peaſants, who are excellent markſmen, poſt themſelves in time of war, on the ſteep inacceſſible rocks, where, animated purely by a zeal for their country, they gall the enemy incredibly. Some provinces are alſo by nature utterly inacceſſible to an army encumbered with artillery. On this account the city of Bergen, tho' fortified by no more than two caſtles towards the ſea, is thought to be in no great danger, if threatned only by a land-force; for the peaſants living in Juſtedale, and other places of the ſame kind, where the only paſſage is thro' a narrow defile, could, with a handful of men, keep

Olaus Magnus, in Hiſt. Sept. Præf. Lib. VI.

off a numerous army. Whether mountains be univerſally a natural girdle or band for ſtrengthening the compages of the globe, as ſome conceive, I leave abſolutely undetermined, it being immaterial to my purpoſe to adopt ſuch conceits for my own *.

Laſtly, theſe natural fortifications ſeem alſo to be an ornament and decoration to the country; the diverſified figures, and alternate eminences, and other varieties, according to the taſte of moſt people, form a much more agreeable landſcape than a flat and even country, which is almoſt every where the ſame. In this reſpect our country affords the moſt delightful contraſts in the diverſity of its proſpects. And theſe moſt magnificent ſtructures of the great architect of nature, raiſe and animate the mind of man, by inſpiring him with the moſt agreeable and the moſt ſublime ſentiments. Towards the extremities of the ſea-coaſt, thoſe who ſail along the bare rocks and towering mountains of Norway, will be apt to conclude, that the country can afford nothing but wretched cottages, and extreme penury; but this opinion ſoon vaniſhes upon their coming into the creeks, and obſerving that here, according to the German proverb, *there are people behind the mountains*, and that in the vallies and narrow interſtices they live very agreeably, amidſt ſuch delightful landſcapes, that within a few miles, a painter might have choice of incomparable originals. It is certain that nature has been more profuſely favourable to the ſituation of ſome farm-houſes, than to moſt royal palaces in other countries, tho' aſſiſted with all the embelliſhments of groves, terraſſes, caſcades, canals, and the like. Some trading places, as Bragneſs and others, are charmingly ſituated betwixt the mountains at the mouth of the rivers. A predeceſſor of mine is ſaid to have given the name of the northern Italy to the diſtrict of Waas, which lies ſome leagues eaſtward of Bergen; and certainly to one who deſires no more than a regular aſſemblage of the beauties of nature (tho' of mere nature) there cannot be a more enchanting proſpect; for all the buildings in it are Wang-church, the parſonage, and a few farm-houſes ſcattered on different eminences. But the beauty of the proſpect is much heightened by two uni-

Pleaſant landſcapes.

* Quod oſſa in microſcoſmo, hoc in geocoſmo montium ſtructura facit, qui totam terreni globi molem ita ſtringunt, ut diſſolui minime poſſit atque hoc modo perfectam conſiſtentiam conſequatur. Athanaſ. Kircherus in Mundo Subterraneo, P. 1. pag. 67.

form

form mountains, gradually riſing in the ſame proportions to a vaſt height, betwixt which runs a valley near half a league in breadth, and a river ſometimes ſpreading into little lakes, and ſometimes precipitating itſelf down the rocks, in foaming and ſonorous caſcades. On both ſides it is bordered with the fineſt meadows, intermingled with little thickets; and the eaſy declivities of the verdant mountains covered with fruitful fields, and farm-houſes ſtanding above each other in a ſucceſſion of natural terraſſes. Between theſe a ſtately foreſt preſents itſelf to the view, and beyond that, the ſummits of mountains covered with perpetual ſnow, and ſtill beyond theſe, ten or twelve ſtreams iſſuing from the ſnow-mountain, and forming an agreeable contraſt in their meanders along the blooming ſides of the mountain, till they loſe themſelves in the rivers beneath. In other places, eſpecially Oſterland, and even beyond Drontheim, in North-land, in the diſtricts of Salten and Senien, there are likewiſe very pleaſant ſpots, beſides other advantages, which the inhabitants reap from the mountains, of which, to avoid prolixity, I now take my leave. But if any want further motives or informations on this head, to lead their meditations to God, as *the God of the mountains*, I refer them to the ivth chapter of Derham's Phyſico Theology.

CHAP.

## CHAP. III.

## Of the WATERS.

SECT. I. *The ſea-coaſt, iſlands, and harbours of Norway.* SECT. II. *Bottom of the ſea along the coaſts.* SECT. III. *Bottomleſs depths even in the narrow ſtreams and creeks which run up the country.* SECT. IV. *Weight of the ſea-water.* SECT. V. *Its colour.* SECT. VI. *Its ſaltneſs.* SECT. VII. *Its fatneſs.* SECT. VIII. *Its coruſcations, and brightneſs in the night.* SECT. IX. *Its agitations by winds, ebb, and flood.* SECT. X. *The Moſkoe river in Nordland, is not what it appears to be at a diſtance.* SECT. XI. *Freſh-water, particularly ſprings, in Norway.* SECT. XII. *Rivulets, currents, rivers, freſh-water lakes, and floating iſlands in them.* SECT. XIII. *The great advantage of ſuch waters for the conveyance and exportation of timber.* SECT. XIV. *Water-falls, or Cataracts, from the rocks into the rivers.* SECT. XV. *Bridges over the rivers, and the wonderful conſtruction of ſome of them.* SECT. XVI. *Eaſy way of travelling in the winter over the frozen waters.*

### SECT. I.

The coaſts, iſlands, and harbours of Norway.

IN our ſurvey of the element of water, in and about Norway, the firſt object which preſents itſelf to us is a part of the north or large Atlantic ſea, which follows the coaſts of Norway for three hundred leagues, and by many narrow channels forms a multitude of ſmall and large iſlands, ſome of them being from three to ſix or nine leagues in length, and not barren; but moſt of them are ſo ſmall, that they are inhabited only by ſome fiſhermen and pilots, who keep a few heads of cattle, which they ſend out for paſture to the neareſt little iſlands, rocks, and Sheers. By ſuch a rampart, which poſſibly may conſiſt of a million or more of ſtone columns, founded in the bottom of the ſea, the capitals whereof ſcarce riſe higher than ſome fathoms above the waves, almoſt the whole weſtern coaſt of Norway is defended; and thro' the providence of the wiſe Creator, there are many advantages which ariſe from them. Among theſe the firſt is, ſecurity againſt any naval power of an enemy, whoſe ſhips, without a pilot from the country itſelf, would not dare to venture within the Sheers, and then they are in danger from the leaſt ſtorm, which hereabouts gives no warning, inſomuch, that in an inſtant, unleſs they have the good fortune of ſecuring themſelves in a good harbour, they may be daſhed to pieces in the creeks, which are all incloſed

with ſteep rocks. This coaſt, indeed, affords ſo many and ſuch good harbours as few other maritime countries can boaſt of; and this is another advantage of theſe numberleſs rocks and Sheers. Yet a large ſhip, which cannot make uſe of oars, will be in danger of not reaching the harbour, before the wind, or the current, which are very violent in the Straits, daſh it againſt the ſteep rocks in the neighbourhood. In order to prevent this danger, ſeveral hundreds of large iron rings, have, by order of the government, eſpecially here about Bergen, been fixed in the rocks more than two fathoms above water, as moorings to the ſhips, when there is not room for anchorage. The coaſters find the advantage of ſo many Sheers and rocks, as theſe protect them in a calm water, againſt the violence of the waves, which is greatly abated by breaking againſt the rocks. On the other hand, a few open places, ſuch as the harbour of the town, and that directly before Jeder, are ſo dangerous to paſs, that many lives are loſt there every year, the waves of the weſtern ocean, when driven by a ſtorm towards the land, making a very hollow and terrible entrance.

Bottom of the ſea.

The bottom of the ſea is here, as every where, full of inequalities, and in this reſpect, not leſs varied than the land, which is frequently an alternate ſucceſſion of high mountains, and deep vallies. The analogy is the ſame in the ſubſtance of the bottom of the ſea, according to the obſervation of pilots, from the end of their leads, where they ſometimes find ſtones, ſometimes clay, chalk, mud, and ſometimes white or brown ſand; and in many places it is over-run, not only with all kinds of ſea-graſs, but with ſeveral ſorts of ſea-trees, ſome of which are pretty large, with corals, and the like ſtony vegetables *. A clear view of theſe, and likewiſe of the incredible multitude of ſea-animals, monſters, &c. moſt of them unknown, to which theſe vegetables partly ſerve as aliment, could not but excite in us the greateſt aſtoniſhment; for from the ſea-vegetables, which ſometimes hang at the lines, or other implements of the fiſhermen, and of which I have a large collection, we muſt conclude, that the bottom of

* Sylvas eſſe ſubmarinas mare rubrum ſat ſuperque docet, ex cujus fundo ſubinde ingens a piſcatoribus corallinarum arborum copia, ceraſo noſtro vix cedentium uti ab Arabibus rubri maris accolis non ſemel audivi, eruitur. Kircherus Mund. Subterr. P. 1. pag. 97.

the ſea, in its plains, mountains, and vallies, has foreſts of different kinds of trees, which, from the ſize of ſome branches which have been drawn up, may be conceived at leaſt equal to the largeſt fruit-trees in our gardens; but I reſerve my own obſervations upon theſe, till I come to treat in their order, of the Norway plants and vegetables.

## SECT. II.

Bottom of the ſea along the coaſt.

The Norway ſhore is in very few places level, or gradually aſcending, but generally ſteep, angular, and impendent, ſo that cloſe to the rocks the ſea is a hundred, two hundred, nay, three hundred fathoms deep; whereas, on the long and uneven ſand-banks, which are generally called Storeg, or by others Haubroe, ſea-breaks, the bottom is much more ſloping. Theſe protuberances run north and ſouth along the coaſt of Norway, like the Sheers, tho' not within them; in ſome places they are but four or ſix leagues, in others twelve or ſixteen from the continent, that from thence it may be concluded, that the bays are formed by them. Theſe Storegs are another diſpoſition of the wiſe Creator, from the abundant fiſheries they afford, like the Dogger-bank betwixt Jutland and England; in a bottomleſs deep the fiſh would be out of reach, but here is as it were their daily rendezvous, and the depth being from ten to fifteen fathoms, they are taken with great eaſe.

## SECT. III.

Unfathomable depths, even in the rivers and creeks.

From the ſea, particularly on the weſt-ſide of Norway, ſeveral large and ſmall creeks run ſix, eight, or ten leagues up the country; in theſe the bottom is found to be very different, tho' in general as deep as that of the ſea without; but as to the depth under water, the peaſants pretend, that the neareſt ſteep mountains are the meaſure by which to judge, they correſponding in their height above water, with the depth of the ſea: Whether this rule be exactly right I ſhall not determine *. This, however, is certain from general experience, that in the middle of theſe weſterly creeks, runs another narrow channel of a quite diſproportionate depth, which therefore is called Dybrende, i. e. the deep courſes; the breadth

* This is confirmed by experience in many other countries. Dampier's Voyages, P. II. p. 476.

is

is from fifty to a hundred fathoms; but all the fiſhermen agree, that the depth is ſeldom leſs than four hundred fathoms, and they are very careful in ſpreading their nets, to caſt them as near this deep channel as poſſible, for the fiſh are caught in the greateſt plenty on its banks, it being as it were a place of their daily reſort; but herein they are obliged to uſe no leſs caution, that their nets be not carried into theſe depths, for the current, on account of its narrowneſs being very rapid, they are hardly recoverable; and, beſides, their line and nets will not ſuffice for a gulph of three or four hundred fathoms. The depth of the water on both ſides of this channel, is commonly about an hundred fathoms, to which, if according to the above-mentioned rule, the height of the ſteep rocks on the ſides be added, tho' many of them are twice or three times higher, the whole ſpace from the creſt of the mountains to the bottom of theſe narrow depths, is at leaſt five hundred fathoms, or fifteen hundred ells. This great depth appears to me very worthy of obſervation, to thoſe who would inveſtigate the effects of the general deluge, theſe deep creeks, and other deep vallies, being, as I conceive, formed by the ebb of the waters, in the ſubſtance of the rocks, which has been ſhewn to have been ſoft and impreſſible, as a paſte, or a maſs of mud, which gradually ſubſided and became a ſolid bottom to the waters, through which the large ſtreams and floods in their impetuous ebb muſt have made an inciſion, more or leſs deep, according to the height of the place from whence they iſſued. Now if it be conſidered, that the long chain of high and extenſive mountains, reaching, north and ſouth, the length of fifty Norway miles from the middle of the dioceſe of Chriſtianſand to Dofrefield, is about ſixteen Norway miles from the furtheſt ſea-coaſt, likewiſe that all the weſtern creeks run acroſs from the root of that chain into the ſea; we ſhall conclude, that the great depth of the creeks is little to be wondered at, the places, from whence the laſt waters fell, being of ſuch an enormous height, conſequently the many waterfalls, which gradually depreſſed the eminences, and the edges of the ſides of the mountains, muſt have been of extreme rapidity, and ſtrong enough to occaſion theſe deep channels. The benefits of them are ſuch, that to them the dioceſe of Bergen may be ſaid to owe its being habitable, and the communication it enjoys

joys with the ſea. For the many inſurmountable rocks and precipices, the roots of which are penetrated by theſe navigable creeks, would elſe have rendered it impoſſible to dwell any where but on the ſea-coaſts, many tracts on this account being wild and uninhabited, in the mountains of Tyrol; and divers parts of this dioceſe, diſtinguiſhed by the name of Uddale, i. e. inacceſſible vallies, are, for want of communication with other countries, either without inhabitants, or they are deſtitute of conveniencies, tho' here and there in no want of fuel and paſture. Concerning this depth of the ſea, I muſt further add, that in ſome places no bottom can be found, as in Floge creek, a Norway mile from Drontheim, where, after meaſuring it with a line of a thouſand fathoms, the ſearch proved fruitleſs, ſo that unqueſtionably the bottom of the ſea has an opening or communication with this immeaſurable abyſs.

## SECT. IV.

Weight of the ſea-water.

Altho' the ſea-water, towards the north, contains leſs ſalt, than that near the line, as ſhall hereafter be ſhewed, yet its weight is much greater than in the warm countries, the cauſe of which is by Iſaac Peyrere, in his letter concerning iſlands, to M. de la Mothe le Vayer, attributed to the aqueous particles, which are here more denſe and impure than elſewhere. But as this creates another inquiry, he might more pertinently have ſaid, that the air near the poles being condenſed by the cold, compreſſes cloſe whatever it touches, and conſequently the particles of the water, and as by this compreſſion they adhere cloſer to each other, conſequently they have force to bear up heavy burdens, which in lighter waters would ſink.

Rohault Traité de Phyſique, Tom. II. p. III. cap. iii. § 9.

## SECT. V.

Its colour.

According to the obſervation of Mr. Urban Hiernes, the water of the north-ſea is of a bluiſh tinge, as that near the Green Cape and Florida partakes of the colour of the ſea-graſs, which grows in great abundance thereabouts; near Vera Cruz it is white, from the chalky bottom, and near Maldivia it is as black as ink, probably by reaſon of the effluvia from the coal-mines, or ſome other black ſubſtance at the bottom. But that the water of the north-ſea, has in itſelf a blue tinge does not appear, and I am

inclined to believe that this blueneſs is no further real, than as the eye is apt to repreſent to itſelf the air, or any object at a great diſtance, of that colour. Peyrere, in the place before cited, affirms, that the ice in the north-ſea is blue, and therefore by the ancients termed Cerulea Glacies. The ſnow, which on the ſummits of the mountains gradually hardens into ice, is of this colour, and therefore commonly called Blaabreen.

## SECT. VI.

Its ſoftneſs.

Altho' the ſea-waters of Norway be much ſalter than thoſe of the Baltic, where the ſea is refreſhed by abundance of rivers runing into it, yet it has not the ſaltneſs of that in warmer countries, eſpecially under the torrid zone. And this is no more than natural; for where the vehement heat of the ſun occaſions a more copious evaporation and exhalation, as in the ſalt-pans, there the ſaline particles in the remaining water become the more cloſely united, and conſequently the ſaltneſs of it more pungent; for that the ſun itſelf ſhould convey in its ſcorching rays innumerable atoms of ſalt to the ſea, and conſequently moſt there, where it ſtrikes the greateſt heat, is contrary to all experience, altho' the long ſince rejected principle of Ariſtotle * is again diſcuſſed and eſpouſed by that very ingenious and diligent naturaliſt in Sweden, Mr. Urban Hierne. It ſeems of more importance here to enquire, why the ſaltneſs of the ſea-water, here decreaſing towards the north, increaſes at ſome diſtance higher towards the north-pole, ſo that the water, no further than Iceland, is ſalter than the water on our Norway coaſts, according to M. Anderſon's remark in his Deſcription of Iceland? The cauſe is plainly this, that a very intenſe cold, ſublimates by evaporations greater quantities of the ſuperficial and freſheſt ſea-water, and partly diſſipates them by froſt. Thus here the cold has, tho' in a leſs degree, almoſt the ſame effect as the heat in hot countries; but this effect it cannot produce on the weſt-coaſt of Norway, where, for the moſt part we have damp weather, and know very little of the clear cold

Lowthorp: Abridgm. vol. II. p. 297.

In the above-mentioned work, p. 83.

* Je dirai ici en paſſant, que c'eſt un erreur d'aſſurer avec Ariſtote, que la ſalure de la mer depend de ce que les eaux ſont brulées par les rayons du ſoleil, car l'on n'a jamais experimenté que la chaleur de cet aſtre, ou meme celle de la flamme ait converti de l'eau douce en de l'eau ſalee. Rohault Phyſique, T. II. p. 111. cap. iv. Sect. 34.

of winter, as I have ſhewn in the firſt chapter, together with the cauſes of it. Further, that the ſea-ſalt diſſolves and detaches itſelf from the adjacent ſalt-grounds, and, partly, is carried thither by ſubterraneous currents, running thro' the deep ſalt-mines; of which kind ſome are to be found in Poland, and other parts, ſeems to me preferable to any other opinion, although the ſagacious Baron Wolſe cannot entirely come into it. But what I alledge in anſwer to the queſtion, why the ſea-water does not continually grow ſalter, is this; that excluſive of the immenſe quantity of ſalt, which the ſea daily loſes by the many ſalt-works in France, Spain, and other countries, excluſive of the rain, and the freſh-water rivers diſcharging themſelves into the ſea, by which, according to the diſpoſition of the wiſe Creator, the balance is continually maintained; excluſive of all this, it is highly credible, that freſh-water ſprings iſſue out of the bottom of the ſea. The poſſibility of this admits of no doubt; but to demonſtrate the reality by any experiment, will be attended with ſome difficulty, yet the fiſhermen living under Sund-moer, have more than once informed me, that they often find, in the body of a ſkate, water entirely freſh; which muſt always be ſuch, if this freſhneſs be the reſult of a kind of filtration, which the water has undergone within the body of the fiſh; but this freſhneſs not being common, I conclude that the fiſh has drank in this freſh-water from a ſpring breaking out in the bottom of the ſea. It is obſervable, by the way, that the ſea-water on the coaſt of Norway, but moſtly on the weſt-ſide, is known to be pretty full of ſalt particles, the peaſants finding no ſmall quantities of ſalt in the clefts and apertures of the rocks, where, by the egreſs and regreſs of the water, ſome ſalt is left with the remaining ſurf, ſuch as might on occaſion be collected and purified. In Hardanger, on Nord-moer, and ſeveral other places, particularly in the dioceſe of Drontheim, the peaſants extract ſalt from the ſea-water by boiling; but as this operation is forced, and conſumes great quantities of wood, therefore the law of Norway prohibits the boiling any more ſalt than is neceſſary to every one for his domeſtic uſes, without the expreſs permiſſion of the magiſtracy to make that uſe of the fuel. About ten years ago, a large ſalt-work was begun at Tonſberg on the king's account, and the ſea-water, after being firſt refined, is there boiled in ſuch quantities, that

Freſh ſprings in the bottom of the ſea.

Salt-pans.

ſeveral

ſeveral ſhip-loads are annually exported; tho' this is but a ſmall matter in compariſon with ſixty, or more, fine large ſhips laden with ſalt, which come every year from Spain and France, for the fiſhery and other uſes.

## SECT. VII.

The ſea-water oily.

Next to its ſaltneſs, the oil, or fatneſs, or unctuouſneſs of the north-ſea, is a remarkable property of it, eſpecially as the innumerable ſhoals of large and ſmall fiſh, which are both ingendered and nouriſhed there, ſerve both for food, and for the benefit of light, to almoſt all countries in Europe. For it is not merely by devouring one another that the fiſh are fattened, or by the aliment they receive from an infinite number of worms, and other inſects, likewiſe ſea-graſs, ſea-trees, and ſuch vegetables, which are the food appropriated to particular kinds of the inhabitants of the ſea; the ſalt-water itſelf, is from its ſaltneſs ſo fat and oily, that when a ſhip is on fire, the ſea-water, ſo far from extinguiſhing, encreaſes the flame. The Chemiſts know how to extract oil from ſalt, and Ariſtotle ſays, Quoniam mari ſuum pingue eſt, quod oleum demonſtrat quod in ſale eſt. Beſides this, in many places the bottom of the ſea is covered with a kind of unctuous loam, or ſlime, which, unqueſtionably, is formed from the ſuperfluous roes and ſpawn of the fiſh, which cannot all produce young, nor can they be all conſumed by the other fiſh whilſt they are freſh, altho' they hunt for it with the greateſt eagerneſs. It is moreover not improbable, that ſmall ſprings or currents of rock-oil, naphtha, ſulphur, or pinguous effluvia of coals, and other ſlimy and oleaginous juices, may ariſe in the ſea as well as the earth.

Ariſt. Probl. § xxiii. Qu. 32.

## SECT. VIII.

Nocturnal coruſcations and effulgence of the ſea.

This unctuouſneſs of the ſea has probably ſome connection with its effulgence and ſcintillations, when the water being ſtirred by rowing, or otherwiſe, appears all on fire, which by our mariners is called Moorild. I have already in the firſt chapter, in treating of the Aurora Borealis, or north-light, taken occaſion to quote Captain Heitman's opinion concerning this phænomenon, and ſhall only obſerve here, that Mr. Urban Hierne, the Swediſh naturaliſt, who in a paſſage before cited, derives the ſea-ſalt from the ſun, judges

judges this ſea-light to be a kind of phoſphorus, formed from the luminous particles of the ſun, and even of the moon, impregnated by water; as is the caſe in the Lapis Bononienſis, and Baldwin's phoſphorus. But inſtead of reſting in theſe, or other conjectures, I am much more inclined to declare my opinion, that this otherwiſe inexplicable phænomenon in the ſea, has been beſt illuſtrated (tho' with room for many additions) by a little piece lately publiſhed at Venice, with the title of Nuovo Scoperto Intorno di luci Notturne dell' Aqua Marina. Having no opportunity of ſeeing the original, I am the more obliged to the diligent and ingenious authors of the New Copenhagen Literary Journal, who have given us the ſubſtance of it in the xxxixth part, of the 24th of Sept. 1750, in the following words, "Our author is the firſt who has explained the true cauſe of this coruſcation: He has obſerved, that in the gulph of Venice, the water is luminous only from the beginning of ſummer till the end of harveſt, and that this light is moſt copious in places abounding with ſea-graſs; and ſtill more when the water is put in motion, either by the winds, ſhips, or oars. In 1746, the author filled a flaſk with this ſcintillating water, and carried it home; but it emitted no light, except only when ſtirred in the dark, it immediately ſparkled. He cloſely inſpected it in the day-time, in order to diſcern whether the water had any thing heterogeneous in it, from whence theſe emanations of light proceeded; but nothing of this kind appeared to the naked eye: he therefore ſtrained the water through a cloſe fine cloth, the conſequence of which was, that the cloth ſhone in the dark, but not the water, however ſhaken or ſtirred. This inclined him to judge, that the lucid ſubſtance in the water was ſomething diſtinct from the water itſelf, eſpecially as he perceived the light, which the cloth emitted, to conſiſt of innumerable lucid particles or points; but not having a microſcope at hand, he could take no minute view of them. Having ſome time after procured a microſcope, he gathered ſome ſea-graſs, which is moſt apt to glitter in the night, and upon examining it in a dark place, he diſcerned above thirty of theſe lucid particles on one ſingle leaf. He ſhook this graſs over a ſheet of paper, when one of theſe particles fell off; it was as ſubtile as an eye-laſh, and about as long, and the colour a black yellow: he now made uſe of the micro-

ſcope, and plainly ſaw it to be a living worm, or annular maggot, conſiſting of eleven wings, like moſt of the larvæ, with as many mamillæ on the ſides inſtead of feet, and both at the head and rump, four trunks or feelers (antennæ or tentacula.) In the proſecution of his reſearches, he found that all theſe lucid appearances in the water, aroſe from theſe minute and almoſt inviſible maggots; their whole bodies were lucid, and not ſome particular part only, which is the caſe of ſome kinds of reptiles; tho', when at reſt, their effulgence was conſiderably fainter. In ſpring theſe luminous animalcula confine themſelves to the ſea-graſs, but in ſummer they are diſperſed all over the ſea, and moſtly on the ſurface. When theſe nocturnal ſcintillations are unuſually ſtrong and frequent, the fiſhermen account it a ſure prognoſtic of a ſtorm, or foul weather; and this proceeds from the greater agitation of the worms, already ſenſible of the approaching changes. This experiment puts it beyond all queſtion, that the glittering of the ſea, in a ſhip's courſe, is occaſioned by theſe worms; and it is no leſs certain, that they are the cauſe of the light in the Penna-marina, (a large muſcle) of which Dr. Shaw writes, that they are frequently caught by the Algerine fiſhermen; and in the night their radiations are ſo ſtrong, that the fiſh neareſt to them in the net are diſcernible without any other light. It were to be wiſhed, that the author had been more preciſe in his deſcription of theſe animalcula; if his eyes may be relied on, one cannot but judge, that they are only a ſpecies of the Genus Aphroditæ." Thus far this author; to which all my preſent addition ſhall be this; the Ignes lambentes, or lambent flames, ſo well known, which by their hovering about the ſhips rigging, and often ſettling on the maſts, tho' without doing any damage, ſtrike a terror into the ſeamen; and likewiſe thoſe Ignes fatui, or jack-a-lanthorns, which deceive the traveller by land, muſt, according to this principle, be no more than worms, bred in the above-mentioned ſulphureous oil, with which both land and ſea is filled, but which is too ſubtile to be diſcerned by day, when even the light of the ſtars is ſeemingly inviſible.

## SECT. IX.

Motion of the ſea by currents, ebb, and flood.

My ſubject brings me at laſt to the ſeveral motions of the water in Norway, by the ebb and flood, and by other perpetual currents; the motion of the ſea by winds, or by the impulſe of the corpuſcles of the air, having already in ſome meaſure been conſidered in the firſt chapter. The motion of the ſea is generally from eaſt to weſt, tho' it be not always apparently ſo to us; for the earth revolving round its axis with a conſtant rapidity, and in an oppoſite direction from weſt to eaſt, and the water as a more lax element, not being capable of equal velocity, but ſomewhat ſlower in its progreſſion, the ſurface thereof ſeems to be in a contrary and retrograde motion. The motion of the water is in ſome meaſure influenced by the ſun, but not to ſuch a degree here as in the warmer countries; where its rays being more perpendicular, act with the greater force *.

Another motion in the ſea is interrupted, and mixes with the general ſtream, occaſioning the water alternately to riſe and fall within the twenty-four hours, when the flood proceeds from the eaſt, and the ebb from the weſt, and theſe alternatives fall out regularly according to the courſe of the moon, ſo that they are very little varied by the ſhifting of the winds. The greateſt height of the flood here is eight feet, but much more uſually from four to ſix, which is far ſhort of the height in the Netherlands, and England, the water being checked in the ſtrait betwixt Calais and Dover, but having more room to extend itſelf in the north-ſea †. That this motion, in other reſpects one of the greateſt myſteries in nature, is, as to its original cauſe dependent on the moon, cannot well be controverted: But whence this influence of the celeſtial bodies on the waters of our globe; whether, according to the ſentiment of the ancients, the rays of the moon leave the ſea im-

Hartſ. Conj. Phyſiq. L. 1. Diſc. I. p. 52.

* The current in ſome places is remarkably ſtrong and impetuous, as where it is extremely ſtraitened and confined at the bottom by ledges of ſheers, rocks, or ſand-banks, at a ſmall diſtance from the ſhore; and being thus contracted into a narrow channel, is ſo difficult to ſtem, that a boat muſt either be drawn along by hands on ſhore, or wait ſome time till the current abates.

† Mr. Lucas Debes, in his deſcription of the iſland of Faro, relates ſomething ſtrange of a freſhwater-lake near Famoye, a town on a hill of a middling height, that it regularly keeps time with the ebbing and flowing of the ſea. As the impreſſion of the moon upon our atmoſphere cannot be ſtronger on this freſh lake than on others, this muſt be ſuppoſed to have a ſubterraneous communication with the ſea, through ſome vaſt and extraordinary hiatus.

preg-

pregnated with an intumeſcent or fermenting power, by which it begins to work alternately, with different forces, like new liquor in a caſk; or whether Deſcartes comes nearer the truth, in advancing, that it is only the atmoſphere of the moon, which makes an impreſſion on all ſublunary bodies (of which patients in certain diſeaſes have very ſenſible experience) but moſt on the ſea, where, accordingly the impreſſion is moſt obſervable: this muſt, as it has hitherto been, remain a difficult problem *, even to our inquiſitive age. And, indeed, there is no abſolute neceſſity that our great Maſter ſhould in this life admit us, as his ſcholars, and the moſt knowing are but novices, into all the arrangements and operations of his almighty power and inſcrutable wiſdom. I rather think it were beſt to reſt in a devout admiration of theſe things, than to ſubject them to an arrogant and preſumptuous deciſion.

## SECT. X.

The Moſkoe-ſtrom not what it is taken for at a diſtance.

There is another kind of current, or motion of the water in the ſea of Norway, remarkable, and ſomewhat relative to the ebb and flood, namely the Maleſtrom, or Moſkoeſtrom, in the 68th degree, in the province of Nordland, and the diſtrict of Lofoden, and near the iſland Moſkoe, from which the current takes its name. Its violence and roarings exceed thoſe of a cataract, being

* "Le fluide peſant et elaſtique, dont nôtre terre eſt environnée, doit comme tous les liquides, s'elever ou s'abaiſſer dans les endroits, où des cauſes etrangeres detruiſſent l'equilibre, d'ou viennent, dans les tems reglés, des changement dans la preſſion de l'air. Le flux et reflux admiré de tout tems, mais inexplicable avant Newton nous fournit la reſolution de ce probleme. Nous voyons cette grande maſſe d'eau s'elever deux foix toutes les vingt-quatre heures, dans le tems que la lune eſt ou directement au deſſus de nous, ou dans le point oppoſé. Nôtre air, par la même raiſon, et dans le même tems doit auſſi changer ſa figure ſpherique en celle d'un ſpheroide allongé dont le grand diametre paſſe par la lune. Le ſoleil, qui de même qu'elle traverſe tous les jours deux fois, nôtre meridien, produiroit le même effet, ſi ſa diſtance plus grande ne mettoit entre ſon action et celle de la lune le rapport de 1 a 4 ½. Le concours de ces deux aſtres dans les tems de la pleine et de la nouvelle lune augmente les elevations de la mer, et doit augmenter de meme les marées inviſibles de l'air, et elles doivent etre plus petites dans les quadratures, lorſque les actions des deux luminaires ſont oppoſées entre elles. Elles ſont d'ailleurs proportionées à leur diſtance plus ou moins grande de la terre. Et les declinaiſons de la lune dans de certains lieux rendent tous les jours l'une des deux marées, tant dans l'airque dans la mer plus grande que l'autre." Biblioth. Raiſonnee de l'an 1746, T. XXXVII. p. 299, 300. This extract from Dr. Mead's treatiſe, De Imperio Solis ac Lunæ in Corpora Humana, &c. is the moſt appoſite of any, and I can confirm it by the inſtance of a lady but lately dead at Bergen, the calves of whoſe legs, in the time of her pregnancy, ſo punctually ſwelled and abated with the efflux and reflux of the ſea, that the time of tide could be determined without looking towards the ſea.

heard

heard to a great diſtance, and without any intermiſſion, except a quarter every ſixth hour, that is, at the turn of high and low water, when its impetuoſity ſeems at a ſtand, which ſhort interval is the only time the fiſhermen can venture in: but this motion ſoon returns, and, however calm the ſea may be, gradually increaſes with ſuch a draught and vortex as abſorb whatever comes within their ſphere of action, and keep it under water for ſome hours, when the fragments, ſhivered by the rocks, appear again. This circumſtance, among others, makes ſtrongly againſt Kircher and others, who imagine that there is here an abyſs penetrating the globe, and iſſuing in ſome very remote parts, which Kircher is ſo particular as to aſſign, for he names the gulf of Bothnia. But after the moſt exact reſearches which the circumſtances will admit, this is but a conjecture without foundation; for this and three other vortices among the Ferroe iſlands, but ſmaller, have no other cauſe, than the colliſion of waves riſing and falling, at the flux and reflux, againſt a ridge of rocks and ſhelves, which confine the water ſo that it precipitates itſelf like a cataract; and thus the higher the flood riſes, the deeper muſt the fall be; and the natural reſult of this is a whirlpool, or vortex, the prodigious ſuction whereof, is ſufficiently known by leſſer experiments. But what has been thus abſorbed, remains no longer at the bottom than the ebb laſts; for the ſuction then ceaſes, and the flood removes all attraction, and permits whatever had been ſunk, to make its appearance again. Of the ſituation of this amazing Moſkoeſtrom we have the following account from Mr. Jonas Ramus, "The mountain of Helſeggen, in Loſoden, lies a league from the iſland Ver, and betwixt theſe two, runs that large and dreadful ſtream called Moſkoeſtrom, from the iſland Moſkoe, which is in the middle of it, together with ſeveral circumjacent iſles, as Ambaaren, half a quarter of a league northward, Iſleſen, Hoeyholm, Kieldholm, Suarven, and Buckholm. Moſkoe lies about half a quarter of a mile ſouth of the iſland of Ver, and betwixt them theſe ſmall iſlands, Otterholm, Flimen, Sandfleſen, Skarholm. Betwixt Loſoden and Moſkoe, the depth of the water is between thirty-ſix and forty fathoms, but on the other ſide, towards Ver, the depth decreaſes ſo as not to afford a convenient paſſage for a veſſel, without the riſk of ſplitting

In Mundo Subterr. C. x. Lib. iii. p. 147.

Nordiſch Chorograph. p. 233, 234.

ting on the rocks, which happens even in the calmeſt weather: when it is flood, the ſtream runs up the country betwixt Lofoden and Moſkoe, with a boiſterous rapidity, but the roar of its impetuous ebb to the ſea, is ſcarce equalled by the loudeſt and moſt dreadful cataracts; the noiſe being heard ſeveral leagues off, and the vortices or pits are of ſuch an extent and depth, that if a ſhip comes within its attraction, it is inevitably abſorbed and carried down to the bottom, and there beat to pieces againſt the rocks; and when the water relaxes, the fragments thereof are thrown up again. But theſe intervals of tranquillity are only at the turn of the ebb and flood, in calm weather, and laſt but a quarter of an hour, its violence gradually returning. When the ſtream is moſt boiſterous, and its fury heightened by a ſtorm, it is dangerous to come within a Norway mile of it, boats, ſhips, and yatchs having been carried away, by not guarding againſt it before they were within its reach. It likewiſe happens frequently, that whales come too near the ſtream, and are overpowered by its violence; and then it is impoſſible to deſcribe their howlings and bellowings in their fruitleſs ſtruggles to diſengage themſelves. A bear once attempting to ſwim from Lofoden to Moſkoe, with a deſign of preying upon the ſheep at paſture in the iſland, afforded the like ſpectacle to the people; the ſtream caught him, and bore him down, whilſt he roared terribly, ſo as to be heard on ſhore. Large ſtocks of firs and pine-trees, after being abſorbed by the current, riſe again, broken and torn to ſuch a degree, as if briſtles grew on them. This plainly ſhews the bottom to conſiſt of craggy rocks, among which they are whirled to and fro. This ſtream is regulated by the flux and reflux of the ſea; it being conſtantly high and low water every ſix hours. In the year 1645, early in the morning of Sexageſima-Sunday, it raged with ſuch noiſe and impetuoſity, that on the iſland of Moſkoe, the very ſtones of the houſes fell to the ground." So far Mr. Ramus, whoſe account perfectly agrees with thoſe given me by others, eſpecially Mr. J. Althand of Ethne, who in his younger years was chaplain there, and conſequently had many opportunities of obſerving variety of circumſtances. Mr. Peder Daſs, who lives on the very ſpot, will admit of no other cauſe of this natural prodigy; and in contradiction to the opinion of the Daniſh poet Arreboe, in his ſtanzas on ſubterraneous watery abyſſes, he

affirms this vortex to ariſe only from the violence and rapidity of the daily ebb and flood, occaſioned by the contraction of its courſe betwixt the rocks, whereby, in calm weather, but much more when the ſea is rouzed by the wind, this Moſkoeſtrom is rendered ſo dangerous and dreadful, both on account of its ſound, and the furious agitation of its mountainous waves.

The like vortices in Ferroe. Ferroe Reſerata, cap. i. p. 45.

For the illuſtration of this ſtrange phænomenon, I ſhall add a deſcription of three vortices, equally rapid, but not bottomleſs, here in the north-ſea, near the iſland of Ferroe: What the late Rev. Mr. Lucas Debes, ſuperintendant there writes of them, deſerves to be read in his own words: "In Ferro are three whirlpools, one betwixt the iſlands of Vider, Suine, and Bord, but here is no great danger: the ſecond is off the iſland of Sand, near Dalsflaes; it is diſtinguiſhed by the appellation Quærne, i. e. mill-wheel, and in blowing weather, or a high tide, is dangerous; but the greateſt danger lies in the third, which is ſouthward of the Suder iſland, and runs round Sumboe-munk. Theſe, and the like whirlpools, are not occaſioned by any extraordinary abyſs, or ſubterraneous cavities, into which the water is violently attracted in the time of ebb, and again ejected at the time of flood; as ſome imagine the flux and reflux, over the whole ocean, to reſult from the like cauſes; for if this were the caſe, it would not be attended with ſuch a terrible ſound, a deep bottom making a ſtill water; but the real cauſe lies in the convexity of the bottom, interſected with canals or trenches.

I have made the moſt diligent reſearch into theſe whirlpools, having been ſent from Ferroe with two perſons, deputed with public powers, to negociate ſome provincial matters; and, on this occaſion, one of them, John Joenſen, an inhabitant of Suderoe, informed me, that he was the firſt, who ventured in a row-boat on the ſouthern whirlpool, which runs from Suderoe round Sumboe-munk, and from his own certain and long experience, gave me the following account: This ſtream, is in itſelf very dreadful and dangerous, eſpecially in a ſtorm or ſtrong tide, it abſorbs every thing near it, and immediately plunges it to the bottom, inſomuch that a large ſhip, within its draught, is infallibly ſwallowed up. It is but a few years ſince the above-mentioned John Joenſen, about Chriſtmas, ſaw a large ſhip driven into this ſtream by a ſtorm,

firſt

firſt it mounted with its prow foremoſt, then was reverted with its ſtern uppermoſt, the ſurf flying over the maſt head; but in a very ſhort time he ſaw no more of it. That expert navigator Bagge Vandel, makes mention of this vortex, adding in particular concerning Peter Oddevald, maſter of a veſſel, that both he and the ſhip's company informed him, that the ſhip was toſſed about in it before he had any ſenſe of the danger, and inſtantly he loſt all power of ſteering her; that the water broke on all ſides into the ſhip, flying up to the maſt head; that the ſails were of no ſervice to extricate him, the weather being quite calm. To which the maſter added, that he had never before been in any danger like it; but that at laſt God was pleaſed to help him, and that by the turn of the tide he got without the draught, and arrived ſafely at Thorſhaven, the place of his deſtination.

But, according to the report of the ſaid John Joenſen, the bottom, near this vortex, lies about eighty or ninety fathoms deep, over which the ſtream runs ſmooth and ſilent; after this is another circle, compaſſing the vortex, at the depth of from twenty-five to thirty, or thirty-five fathoms, and here the ſea, fermented by the ſtream, begins to be agitated, to attract, and whirl round; afterwards the bottom riſes ſo as to be but eight, ten, or twelve fathoms deep, and riſes in a winding circle, which increaſes gradually in four ſpiral windings: on this ſhallow ground, are likewiſe protuberances like the creſts on mountains, not more than eight fathoms deep from the ſurface of the water, whereas, the ſpace between is from ten to twelve fathoms deep; and hence it is, that fiſhing-boats which come into this unequal bottom, are, by the ſtream circulating round theſe rocks, whirled about like a mill-ſtone, with ſuch rapidity, that young perſons who are not uſed to the whirling, grow giddy, and lay themſelves down in the bottom of the boat; and beſides this motion, the boat likewiſe undergoes a rotation round the large ſpiral circle, formed by the nature of the bottom.

In the third place, there are betwixt theſe four ſpiral ſhallows, three canals, or trenches, where the ſea moves gently round in ſmall circles, and beyond them, eaſtward, where the ſhallows commence, is a draught like a ſluice, thro' which the ſtream is carried, tho', within, its force and agitations are not ſo violent.

The depth of theſe canals is from twenty-five to thirty and thirty-five fathoms; and from the diſparity of the depths, and the eaſy whirling of the water in them, the bottom appears to reſemble the land, that is, to conſiſt of eminences and vallies.

Fourthly, in the middle of this vortex is a deep pit, which on its banks meaſures from fifty to fifty-eight fathoms deep; but in its middle is generally not leſs than ſixty-one. This innermoſt water is on its ſurface perfectly calm and ſmooth, only moving in a gentle circle, as is manifeſt from the foam of the ſea; which, on its devolution from the vortex, moves in a circle. On the ſouth ſide of this pit, a rock, ten fathom high, riſes out of the water; it is called Sumboe-munk, and here the depth of the water is but fifteen fathoms. North of this rock lie ſix ſheers, betwixt which, and the rock, the depth of water is three or four fathoms. And what is very remarkable (and which I have accordingly taken notice of elſewhere) among theſe ſheers the compaſs turns round, in the manner of the vortex, and is ſpoilt by the motion. Likewiſe, at ſome height on Sumboe-munk, there is this ſingularity, that in the midſt of ſummer, and in a ſtrong ſunſhine, the people who go thither to catch birds, can hardly ſtand in their ambuſcades for cold; beſides, the very birds which breed and live there, are ſo extremely bare of fleſh, that their whole ſubſtance is little more than their feathers; but of the cauſe of this ſingular cold, I can only form uncertain conjectures. The water about Ferroe, however eſſentially cold, yet by its ſaltneſs and agitation, uſually attemperates the winter's ſeverity in Ferroe; I cannot therefore comprehend, how the frequent agitations of this ſtream againſt the rock, ſhould by an effect quite oppoſite, occaſion ſuch an extraordinary cold. It might, by way of a ſolution, be ſaid, that there being a magnetic power in theſe ſheers, as the centre of theſe round ſhallows, there muſt in the other round ſhallows be a ſtrong magnet, which, beſides the force of the current, rapidly draws large ſhips from their courſe; and if it be granted, that ſuch magnets are there, then I ſubmit it to the judgment of others, whether the cauſe of this ſingular cold is to be ſought for in theſe magnetic powers.

Fifthly, north of the vortex, towards the Suder iſland, there are other protuberances in the bottom, againſt which the current

is in like manner impelled, and the agitation attended with a very dreadful noiſe. A clear idea of what is deſcribed in the foregoing account cannot be perfectly conveyed by a deſcription. The judicious reader will readily conceive, what a perilous place ſuch a vortex muſt be in a hard gale of wind, and a full tide; ſince even in a calm, when the current is moſt gentle, and at the turn of the tide, which is the only time fiſhermen can venture out, the boats are whirled round on the ſurface of it.

The whirlpool, below the iſle of Sand, continues circulating to its innermoſt centre, and is of no great depth in the middle. The third whirlpool, betwixt the northward iſlands, I have viſited twice myſelf; and upon approaching it, the boat was attracted towards it, with ſuch force, that it was with great difficulty the people prevented the ſtream from getting the better of us, labouring at the oars on one ſide, and ſteering with them on the other. If a boat be caught by the ſtream, the current firſt whirls it twice round, and then twice round in a contrary direction, this alternative continuing four or five times; from which the nature of the bottom becomes eaſily determinable.

Theſe abyſſes have engaged the attention of many ingenious heads, the depth of the waters being ſuch, that no one could, for a long time, venture to ſound the bottom, ſo that the general opinion among the learned was, that they were gulphs, or abyſſes, ſuch as cauſed the ebb and flood. Among others, Kircher writes of the famous vortex in Norway, called Moſkoeſtrom, that it is a ſea-vortex, attracting the flood under the ſhore of Norway, where, thro' another abyſs, it is diſcharged into the gulph of Bothnia; which opinion is embraced by M. Herbin, in a diſſertation delivered by him at Copenhagen, 1670. But as this opinion is only founded in weak reports, it is totally erroneous, as will appear from the following arguments. Firſt, this Moſkoeſtrom runs along the country, betwixt two ſhores, or iſlands, where the bottom, or ground of the ſea, is full of eminences, and without any pits. Of the like nature alſo are all the vortices, both in Ferroe and in Bothnia. Kircher likewiſe affirms, that many ſuch abyſſes are to be found throughout the whole world; but always near the continent, or betwixt ſmall iſlands. Such is the ſituation of Scylla and Charybdis, in the ſea of Sicily, the one below

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In Tabula Geographico-Hydrographica.

low Sicily, and the other at the point of Calabria; and for the greater confirmation of this matter, Kircher mentions a high rock ſtanding out in the middle of this current, like the rock before deſcribed, in the vortex called Sumboe; and certainly theſe high rocks, in the midſt of ſuch perilous ſtreams, are no other than natural marks ſet up by God himſelf, that navigators, having timely notice, may avoid the danger.

Next, Mr. Peter Clauſſon, in his deſcription of Norway, writes, that the gyration of the water is attended with ſuch roaring agitations as to be heard many miles off. This would not be the caſe were this vortex occaſioned by the extraordinary profundity of the bottom; for it is deepeſt in ſtill waters; but theſe roarings proceed from the water being retarded, by its contraction betwixt two iſlands, in its progreſs towards the land at the time of flood, and likewiſe in its regreſs thro' the ſame narrow paſſage at ebb; and, moreover, the flood is obſtructed by ſpiral hills, or protuberances, and lofty angular rocks; from whence it is natural to conclude, that ſuch violent colliſions muſt cauſe a terrible noiſe. Thirdly, Mr. Clauſſon writes, that this ſtream abſorbs whole trees, and after ſubmerging them, they come up again with their roots and branches ſtript and torn, which is occaſioned by theſe round and angular rocks, which in the rapid gyrations of the trees round them, ſtrip the bark, and tear the roots and branches; and many of theſe mangled trees are driven to Ferroe, whereas in an abyſs, they would be carried another way; for then the cavity would be large and deep, and the water circulate gently, and whatever was abſorbed would paſs through the abyſs without any damage; as may be ſeen from the plain inſtance of a piece of wood put into a funnel, afterwards filled with water." Thus far Mr. Debes.

It is evident, from the premiſes, that ſome ancient and foreign writers, who could not minutely examine the circumſtances, miſtook theſe vortices as the cauſe of the ebb and flood; of which they are, on the contrary, in reality the effect. I muſt not omit here, that Mr. Jonas Ramus, in the above-mentioned place, page 220, &c. labours to ſhew it probable, that Scylla aud Charybdis, which have always been accounted to lie upon the coaſt of Sicily, were no other than this Moſkoeſtrom, whither Ulyſſes was actually

actually driven in the courſe of his wanderings; the inundations of the water (in the Daniſh language, Vanders Skyllen) and the iſland Skarſholm, having given occaſion to the names of Scylla and Charybdis. Though I can by no means agree to the opinion of this ingenious Gentleman, concerning Ulyſſes's voyage, yet, in proving the probability of it in another learned piece, it muſt be confeſſed, that he has given proofs of an uncommon erudition and genius, and as to the Moſkoeſtrom, I ſhall exhibit his opinion in his own words, that then the reader may adopt as much and as little of it as he pleaſes.

Singular opinion concerning the ſituation of Scylla and Charybdis.

" Halogaland appears to be one of the firſt inhabited provinces in Norway; for ſoon after the Trojan war, Ulyſſes, whoſe name was Outin, ſailing to the extreme limits of the great ocean, arrived in a dark country, of which he gives the following deſcription; it was full of high mountains, reaching to the very clouds, and perpetually covered with miſts and thick darkneſs, ſo that they never enjoyed the benefit of the ſun, neither at its riſing nor ſetting, and there he met with two horrible ſea-vortices, Scylla and Charybdis, the noiſe of which ſtruck him with terror, before he came near them; and then he ſaw a violent ebullition of the ſea, like a boiling-kettle, throwing up froth and ſmoke, which were rapidly carried up in the air. All this has by many been falſly interpreted of the ſtrait near Sicily, though that iſland has none of thoſe high mountains, covered with dark clouds, nor that gloomineſs impenatrable to the rays of the ſun, nor a perillous roaring ſtream, ſo as to be impaſſable without extreme danger. But all this perfectly coincides with Moſkoeſtrom, near Helleland, where there are, on the ſide of Lofode, thoſe high mountains called Helſeggen, the ſummits of which, according to Homer's deſcription, were inacceſſible to any man, tho' he had twenty hands and feet, and in winter involved in continual miſts and darkneſs; for from the 27th of November to the 25th of December, old ſtile, the ſun is never ſeen there. There, likewiſe, are thoſe terrible ebullitions, and horrible ſounds, which ſo terrified Ulyſſes at Scylla and Charybdis; circumſtances quite ſimilar to the roaring fall betwixt Helſeggen and Moſkoe, where the ſtream overflows the intermediate rocks and iſlands, and thus came to be called Scilla, from Skillers; and on the other ſide of

Moſkoe, are alſo iſlands and rocks, againſt which the ſtream breaks, among theſe, particularly, is the iſland Skarholm, which may be taken for Charybdis.

The ancient geographers are known to have had ſome information of ſea-vortices in the north, and according to their opinion, lying under the north-pole, as Jacobus Cnoxen of Buſcodun, in his Itinerarium, and Mercator in his Atlas, pretend, whoſe opinions alſo Bertius has followed, and given a repreſentation of ſome ſea-abyſſes under the north-pole, together with an iſland, which he calls Ruſt; but as we are now ſenſible that there is no going within ſeveral degrees of the north-pole, on account of the extreme cold, and of the ice-mountains; therefore this ſea-abyſs, of which they had heard, can be no other than this Moſkoeſtrom, which lies no farther north than a little beyond the ſixty-eighth degree; and the navigators, who frequent the more northern ſeas, have hitherto met with no other vortices. And as for the iſland Ruſt, near which this ſea-vortex is placed, the ſimilitude of the name ſhews it to be the iſland Roeſt, which is but four Norway miles from the Moſkoeſtrom. This iſland of Ruſt, may poſſibly be the ſame neſs, or cape, in the north, to which Pliny gives the name of Rubeas.

Ulyſſes afterwards reports, that ten days after ſailing by Charybdis, he came to the iſland Ogygia, which he deſcribes, as divided by four rivers, each having its particular outlet. This remarkably correſponds with the iſland Hinde, which is ſo interſected by deep creeks, in the ſouth, north, and eaſt parts, as to be divided into four parts, of which the ſouthern belongs to Salten, both the weſtern parts to Lofoden and Weſteraalen, and the north part to Sennien. One of theſe creeks is called Oegursfiord, or Agisfiord, an appellation which has ſome affinity with that of Ogygia; and that Ulyſſes, whoſe name was Outin, lived ſeven years in this iſland, married and had children there, agrees with the account of our chronicles concerning Outin, where his genealogy is called Haleigatal, becauſe his deſcendants lived in Halogaland, from which Outin's Hagen Ladejarl derives his origin, and according to Sturleſen, this genealogy has thence obtained the name of Haleigatal.

Plutarch,

Plutarch, likewiſe, in his treatiſe De Facie in orbe Lunæ, makes mention of ſome Grecian people, who lived in the iſlands of the north, where the ſun was viſible for thirty days together; and did not, during that time, deſcend above an hour beneath the horizon. This can be applicable to no other iſlands, than thoſe in Helleland and Salten; for to this preſent time, neither in the eaſt or weſt, has any iſland been diſcovered, with any ſuch phænomena; but on the iſland of Dum, in Helleland, the ſun, in ſummer, about the longeſt day, is clearly ſeen both day and night, which ſhews this iſland to lie in the 66 ½ degree under the arctic polar circle, where the frigid zone begins; but the farther one advances towards the north, the higher the ſun is ſeen at midnight, above the horizon. It is very poſſible that Pliny might have intelligence of this iſland of Dum, if that, which he calls Dumna, be the very ſame iſland. And when Plutarch further writes, that the Greeks on that iſland, were perſons of abſtemious lives, and accounted a moſt venerable race, this tallies with Sturleſen's relation of Outin, and his retinue, namely, that they were held to be gods, and that divine honours were paid to them." So far I have cited from Mr. Ramus.

Another remarkable particular in the waters of the north, and withal, to me more unaccountable, than what has hitherto been mentioned of the Moſkoeſtrom, is the Külſtrom, as it is called, four Norway miles off Bergen, in the pariſh of Lindaas, running betwixt the continent and many ſmall iſlands, and to which we may properly apply the motto, *Semper contrarius eſto*, from the continual oppoſition of its courſe to that of others, flowing when they ebb, and ebbing at their floods. Whether this irregularity be owing to the length of its courſe, in ſeveral ſmall channels between the iſlands, the water being ſo long detained as not to ebb, till it returns from the ſea in other places, or what other cauſe further experience may ſuggeſt, I paſs over; concluding, with this admonition, that on this Külſtrom, the inadvertency of a pilot is extremely dangerous, of which there was once a melancholy inſtance in the loſs of ſeven northland barks. The Külſtrom.

## SECT. XI.

Freſh-waters, particularly ſprings, in Norway.

From the north-ſea, and the ſalt-waters, I now proceed to the freſh ſprings, rivers, and lakes. Here, as in other places, theſe are not equally light, pure, and wholſom, their qualities depending on their bottom, or the ſtrata of earth or ſtone which they meet with in their courſe, generally bringing with them particles of what they have carried off by the way. As to this circumſtance, our Norway ſprings are not much to be boaſted of; for their beds, or bottoms, ſhew them to have ſo much chalk, clay, or oaker in them, that a drop on a plate, leaves a white, brown, or yellow ſpot. However, the freſh-water in Norway, in general, may be conſidered as good and ſalubrious, I may ſay, very good, in compariſon with others, as the water, together with the air, unqueſtionably, contributes greatly to the vigour of the inhabitants, who enjoy an uninterrupted health, to a length of days, more general and far beyond the period allotted to the inhabitants of moſt other parts of Europe. The common people eſpecially, hold out to a very advanced age; for they live more upon water, than wine and other ſtrong liquors. The metal, of which there is moſt abundance, both here and in Sweden, and which conſequently moſt of all tinges the freſh-waters, is iron, for the aqueous particles being analyſed, there remains a ferruginous matter ſubſided, which the magnet attracts, and which has upon moſt people a laxative effect.

There is likewiſe, no doubt, that our country affords ſeveral kinds of medicinal ſprings, tho', for want of due ſearch, few ſuch are become known; as the learned M. Lochſtor complains in the following words, which I the rather inſert, as they at the ſame time mention one of the afore-mentioned medicinal ſprings.

In Diſſertatione de Medicamentis Norvegiæ ſufficientibus. Hafn. 1744.

"Coronidis loco monendum duxi, haud deeſſe Norvegiæ fontes medicatos, deeſſe autem, qui in horum vires et principia inquirant, ſolertes naturalium rerum ſtudioſos. Memini enim, me vidiſſe fontem (quem paucis abhinc annis invenit ſedulus naturæ ſcrutator avunculus meus Carolus Robſham in diæceſeos Chriſtianienſis diſtrictu, cui nomen Hackedalen, circa villam quam habitat vulgo Buraas dictam) minerali quadam aqua ſcaturientem, a cujus uſu convaluere variis morbis laborantes, ita ut etiam fama

ad exteros venerit, qui magnam hujus aquæ copiam ſibi apportari curarunt." About two years ago, when I made a viſit to Counſellor Swerdrup, proprietor of the iron manufacture at Hakkedal, he carried me to a ſpring, which is probably that mentioned by M. Lochſtar; upon taſting it, I found the water light and palatable, and, as the proprietor informed me, it is very ſalubrious; eſpecially in hypocondriac caſes, by attenuating and rectifying the inſpiſſated blood.

Mr. Peter Nicholas Undalin, in his deſcription of Norway, relates from an old book, called Speculum Morale (doubtleſs a manuſcript now loſt) that the water of Birkedahl fen in Sundmoer, in this dioceſe, has a petrifying quality, and that within three years it turns hazle into ſtone, but not elder, which grows near it. As ſuch a power is inherent in ſome waters*, and I myſelf have ſeveral undeniable petrefactions of beech, hazle, willow, and other wood, I made no difficulty of giving credit to this account; and tho' it appeared a little ſuſpicious, when I firſt received ſome of this pretended petrefaction from the fen of Sundmoer, yet I ſuſpended my judgment, till laſt ſummer; when on my viſitation, I had an opportunity of informing myſelf more particularly from the miniſter of the place, Mr. Jver Munthe, at Volden. I found that there was no ſuch thing as petrifying water in Birkedal-fen, but that on one ſide of it, there is a piece of an Amianthus, or Aſbeſtos rock, which being diviſible into long pliant threads, like flax, and being more like wood than ſtone, has been given out for petrified wood; and brought the neighbouring moraſs into great and undeſerved honour and reputation. This is ſo far from being any thing new, that it is a very ancient tradition, and many intelligent perſons have been deceived by it; among others, Girald Cambrenſis, as appears from his Topograph. Hibern. cap. viii. where he ſays, " Eſt et in Norvegia fons ſimilis naturæ, ſed tanto tamen efficaciæ majoris, quanto ad frigidam zonam magis accedit. In hoc enim non tantum ligna, ſed et lina lineæque telæ per annum impoſitæ duriſſimum in lapidem congelantur,

* The water doth actually pervade, either longitudinally or tranſverſally, the minute interſtices of the wood, fills it with lapideous particles, dilates it, and when by a cauſtic corroſive power, which it derives from lime, it has deſtroyed the wood, it then appears in the form of the vegetable into which it penetrated. Hamb. Mag. Vol. II. p. 162.

unde

unde et Waldemaro Danorum regi noſtris diebus regnanti, quidam epiſcopus Norvegiæ Aſloenſis, quod anno præterito probandi cauſa ab eodem ſuſceperat, naturæ jam retulit bipartitæ: parte enim media fonti impoſita lapis erat, altera parte, qua extra jacuerat, in ſua permanente natura."

## SECT. XII.

Brooks, Rivers, rivulets, freſh lakes, and iſlands floating in them.

From the many ſprings iſſuing out of the mountains in Norway, and from the vaſt maſſes of ſnow accumulated on the ſummits of them, whence, at times gently diſſolving, they ſend down great quantities of water, I have already taken occaſion to obſerve the providence of the wiſe and good Creator, in theſe innumerable ſupplies of water, which ſtreaming down the mountains, water their parched ſides, and in their further progreſs, refreſh the vallies and the level country beneath. By the junction and confluence of ſeveral of theſe rivulets, are formed thoſe large ſtreams and rivers, which in the old northern language, were called by the general name of Elven, from whence one of the largeſt rivers in Germany, by way of eminence, derives it name of Elbe (Elven.) I ſhall here ſpeak of ſome of the moſt noted of theſe Elven, according to the beſt informations I could procure.

The Nied, is a river iſſuing from Tydalen, on the Borders of Sweden, runs weſtward into the lake Selboe, afterwards, winds to the northward, paſſing by the city of Drontheim, to which it anciently gave the Latin, as well as a Norwegian, name of Nideros, or Nidroſia.

Sule-Elv, ſo called from the mountain Sule (Sulefield) from whence, deſcending in a rapid courſe, it runs through Nordale into the ſea.

Gaulen, or Gulen, has its riſe eaſtward, near Skarsfield, a mountain in the north, on this ſide Roraas, and after running about twenty leagues weſtward, through Aalen, Hlotaalen, Storen, and Melhuus, diſcharges itſelf into the ſea, about a league to the weſt of Drontheim. In the year 1344, great damages were done by a ſurpriſing inundation of this river, which, to the aſtoniſhment of the country, ſeemed totally drained, but in the mean time had buried itſelf under-ground, from whence it again burſt forth with ſuch violence, that the earth and ſtones thrown up by the

the eruption, filled the valley, and made a kind of dam, which, however, was broke through, and washed away by the force of the water: On this occasion, besides some churches, forty-eight farm-houses were destroyed, and two hundred and fifty persons drowned.

Otteroen is the largest river on the side of Agde, running thirty leagues from the mountain, through Sætterdale and Efie, to the cataract of Wiland, into which it empties itself.

Syre, or the river Sire, rises near the mountain Lang, runs thro' the vale of Syre into the lake of Lunde, in the diocese of Christiansand, afterwards it discharges itself into the sea, not through a broad mouth, or by a gentle fall, as usual to other rivers, but shoots into it like an arrow, through a very contracted strait betwixt rocks, with such an impetuosity as creates, even in the calmest weather, a great agitation in the water, for the length of two leagues, and from my own experience, I can say, that the seamen must be very careful of coming too near it *.

Nid, which gives name to the lordship of Nedenes, and Skeen, from whence a town is so called, both issue out of Tellemark; and are equally large. Great quantities of timber for saw-mills being floated on them, the falls have, with infinite labour, been diverted, by canals and passages cut through the rocks.

The river Tyrefiord, or Dramme, discharges itself into the sea near Bragness, whither it also brings timber; near Honefosse, it is joined by two large rivers, of which one comes from Oedale, and the other from Hadeland.

Loven, or Laven, rises in the highest part of Nummedal, and after watering Kongsberg, loses itself in the sea near Laurwig, which derives its name from it.

Glaamen, or Glommen, is the largest river in all Norway, and as such distinguished by the name of Stor-Elven, the great river; from the foot of the mountain of Dofre it runs a long way thro' Oesterdale and Soloe, afterwards joins the Vorme, another large river, which comes out of Mioes and Guldbrandsdale; then traversing the lake Oeyeren, it hastens to Sarp, near Friederichstadt, whose chief dependance is the timber trade.

* It is unquestionably from some such confinement of a narrow outlet, that the Rhone protrudes its waters into the lake of Geneva, with such rapidity, that to a considerable distance, they retain their natural freshness, without any mixture of those of the lake.

Among the freſh-water lakes*, through which theſe rivers run, the moſt noted are Ryſſvand in Nordland, Snaaſen, the lake Selboe, the greater and leſſer Mioes, Slirevand, Sperdille, Rand, Veſten, Saren, Modum, Lund, Norſoe, Hvidſoe; Fariſvand, Oeyevand, and ſeveral others, the ſituations of which may be found in the maps. My preſent deſign requires me only to obſerve, that theſe lakes abound in fiſh, and are navigable, in caſe of neceſſity, for large veſſels. The hiſtory of Norway even informs us of fleets fitted out, and wars carried on in theſe inland ſeas, betwixt the kings and their competitors †. In ſome of them are alſo floating iſlands, or parcels of land about thirty or forty ells in length, with trees growing on them, which having been ſeparated from the main land, are driven about as the wind ſets, and when cloſe to the ſhore, are ſhoved off with a pole. They are ſaid to grow, as it were, by the acceſſion of reeds, graſs, weeds, and the like ſubſtances. Both the Plinys, eſpecially the younger, mention the like curioſities in Italy, which Kircher has alſo thought worth notice, in his Mundus Subterraneus, lib. v. cap. 2. particularly the floating iſlands on the lake di Bagni, or Solfatara, four miles from Tivoli; and, in my opinion, they are not different from thoſe which I have ſeveral times ſeen in this country, particularly in 1749, on my return from Chriſtiania, when the rains had ſwelled the river near Nitſund to ſuch a degree, that it overflowed a conſiderable tract on both ſides of the valley, riſing above the tops of the middling trees, and carrying away great quantities of earth and wood, ſome of which floated along ſide of my boat. Yet this is not a matter of ſo much wonder as what is called the Mardyne, which is frequently met with on the ſalt-water, in the creeks; theſe are level clods compoſed of ſea-graſs, twigs, and the foam of the ſea, upon which, the fiſhermen ſay, certain ſea-fowls lay their eggs. If this be matter of fact, it muſt be acknowledged another inſtance of the providence and wiſe diſpoſition of the Creator.

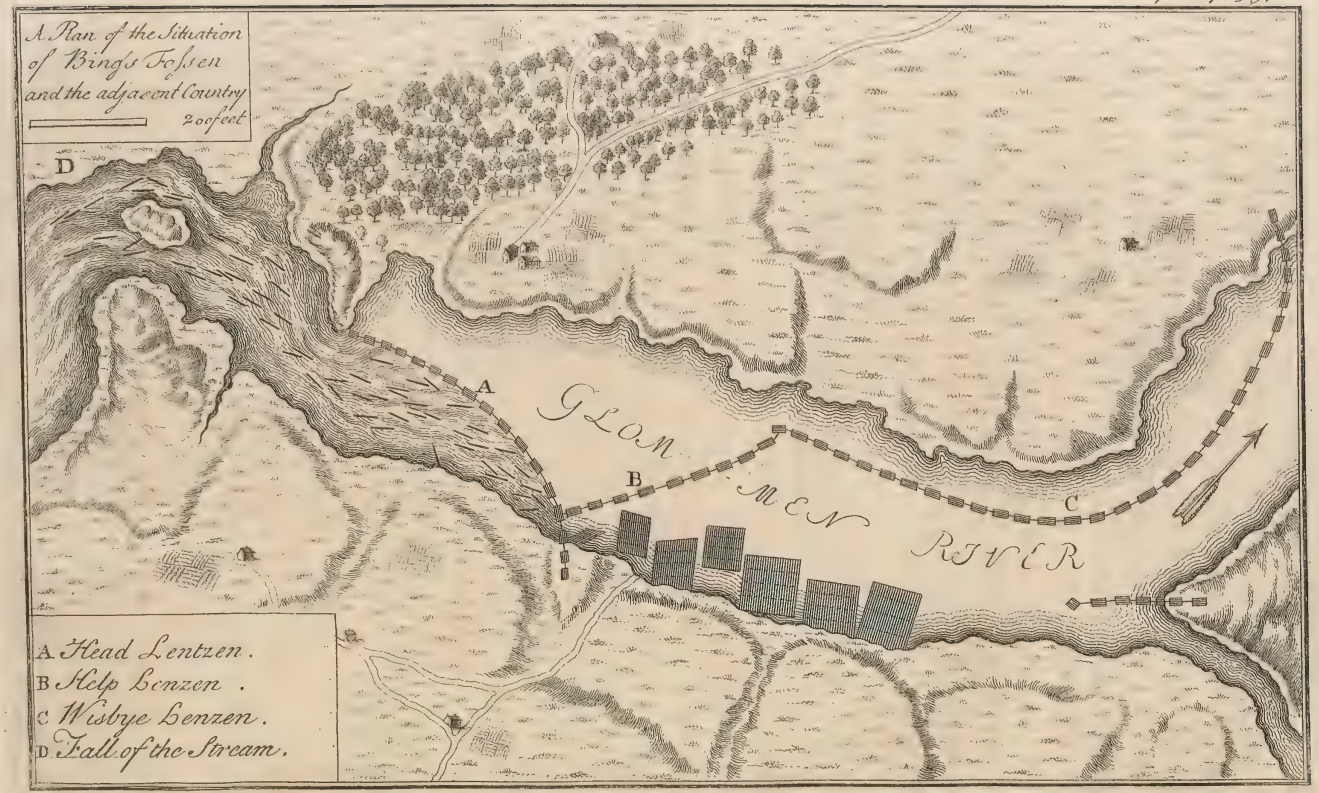
Floating iſlands.

Lib. ii. Ep. 20.

* M. Scheuchzer, in his treatiſe on the Menſuration of the Height of Mountains, judiciouſly ſhews the wiſe diſpoſition of Providence, in providing for rivers, eſpecially in mountainous countries, room to ſubſide and break the violence of their fall or courſe, in the lakes where they ſpread their waters. Without this proviſion, they might by their inundations in ſummer, when the ſnows melt on the mountains, occaſion great damage to the graſs and corn in the vallies beneath. Philoſoph. Tranſact. Vol. xxxv. N° 1.

† Several veſſels of conſiderable burden are ſtill uſed in Faris-Vand, and ſome others, for the carriage of goods, eſpecially for the uſe of the founderies.

SECT.


A Plan of the Situation of Bing's Fossen and the adjacent Country
200 feet
D
A
B
C
GLOM MEN RIVER
A Head Lentzen.
B Help Lenzen.
C Wisbye Lenzen.
D Fall of the Stream.

## SECT. XIII.

Great advantages of these waters for embarking and forwarding the timber.

At any great distance from the sea, the rivers of Norway are not navigable for vessels of considerable burden; for though in many places, there be a sufficient depth of water, yet the waterfalls, caused by the intervening rocks and clifts, are unsurmountable obstacles, the stream precipitating itself from a height of 6, 8, or 10 fathoms, where only masts and such timber can be floated down, and many of these are destroyed; yet the greatest part get safely through, and being marked by their owners, are secured at the Lentzes. These are large booms, fortified with iron bolts, and laid across several parts of the river for stopping the timber. The breaking of a Lentz is of such ill consequence to the timber-merchants, that in 1675 such an accident which happen'd by an inundation of the Glommen, occasioned many bankruptcies among them *. As these and other rivers perform the capital service of conveying from the mountains and forests those masts and timbers, which without such conveyance would be absolutely useless with respect to commerce, so by their several waterfalls they are of a further utility, in driving several hundred saw-mills, where, with little labour, planks and boards are sawed to all dimensions.

See plate VII.

## SECT. XIV.

Water-falls from the rocks into the rivers.

The vast force of rivers in some mountainous countries, where the fall from lofty rocks redoubles the motion of the water, may in some measure be conceived from what I have already related of the sudden subterraneous course of the river Gule, and the inundation occasioned by the subsequent eruption. But I shall here add another instance of this kind still more wonderful, which, according to the authentic account from whence it is taken, happened in the year 1702. I mean the sudden immersion of the family seat of Borge near Friderickstad into a deep abyss. The particulars of this unhappy and singular accident may be read in the 'nova literaria maris baltici ad ann. 1703. maj. p. 3. where is annexed a draught of the situation of the place. In the night of the

* The yearly charge of such a Lentze or Boom, may in some places amount to three or four hundred Rix Dollars, but in return it yields to the owner no less than a thousand or eleven hundred, for at least thirty thousand dozen of large pieces of timber pass through it, of which each makes six or eight planks.

fifth of February, of the ſaid year, that ſuperb edifice, which was ſituate over againſt Hafflund, together with every thing in it, ſunk down into an abyſs of an hundred fathom deep, the gap being inſtantaneouſly filled up by a piece of water, betwixt three or four hundred ells long, and of half the breadth. The houſe was doubly walled, but of theſe, as well as ſeveral high towers, not the leaſt trace was to be ſeen; with it periſhed fourteen ſouls, and two hundred head of cattle. The lord and lady Wœrnſekiold, two children, and the ſteward had the good fortune providentially to ſave themſelves. The lady being then near her time, was attended by a midwife, who in a great conſternation came to acquaint them, that the houſe and ground began to give way, upon which they immediately croſſed the water to a ſeat of her lord's brother, where the very next day the lady was delivered. The cauſe of this ſo extraordinary cataſtrophe, was no other, than the aforementioned large river Glaamen or Glomen, which precipitating itſelf down the waterfall near Sarp, had probably for a long time, in its ſubterraneous concealment, undermined the foundation, * for its courſe there is extremely rapid, and the water-fall near Sarp, driving no leſs than ſeventeen mills, is ſo violent, that beſides the roarings thereof, which are heard four or five leagues off, its water is thrown up into the air to ſuch a height, that at ſome diſtance, in dry weather, it looks like rain; conſequently a rainbow may always be ſeen here when the ſun ſhines, its rays being frequently refracted among the drops of water, and thus is exhibited the cleareſt idea of the formation of that meteor. Theſe water-falls in Norway which are of different height and rapidity, tho' none equal to this, are no leſs dangerous, on too near an approach to them than the above-mentioned Moſkoeſtrom. Captain Wœrneſkiold had fatal experience of this in the year 1735, when, by inadvertency, the current of the Sarp water-fall overpowered him, and overſet the boat. In theſe places ſwimming will not ſave the life of any animal, the ducks only excepted, who, after continuing for ſome time out of ſight, emerge alive without any hurt, according to the report of thoſe who have diverted themſelves with the experiment. In ancient times this cataract is ſaid to have been made uſe of for

* An inſtance of the like happened in Switzerland, 1618, when the whole town of Plurs ſuddenly ſunk in and was never ſeen afterwards.

the

the execution of traitors, rebels, chiefs of ſeditions, and the like peſts of ſociety; they were thrown down alive to be daſhed by the boiſterous waters againſt the points of the rocks, that they might periſh in a tumult, by a violence analogous to that, to which they had inſtigated others; a puniſhment, which, however ſevere, muſt be owned to have been very adequate and emblematical. The Egyptian water-falls or cataracts, mentioned by Pliny, were probably not ſo remarkable as theſe, and ſome others, in Norway, the fall of them from the rocks not exceeding ſeven or eight feet. And as the noiſe of our cataracts, how great ſoever, has never yet deprived any one of the ſenſe of hearing, Cicero's account of the Egyptian Catadupa, may be conſidered as viſionary *; though the learned Dr. Richard Pocock, who in his deſcription of the Eaſt, animadverts on this account, may not have recollected other and larger cataracts, which may be further up the country.

## SECT. XV.

Many of the bridges over the rivers are of a ſurpriſing conſtruction.

The bridges over the rivers in Norway, to the beſt of my knowledge, are not any where walled, but framed merely of timber, of which are made the ſtone-caſes; theſe are large and quadrangular, and ſerve as pillars or ſupporters, being filled with ſtones in order to ſettle them. The largeſt of this kind, hereabouts, is the bridge of Sunde in Guldbrandſdale, where the water of the Great Mioes, which at firſt is called Oten and Laagen, begins to increaſe. This bridge, of which it is ſaid that it is never finiſhed, ſome repairs being continually neceſſary, is a thouſand paces long, and conſiſts of forty-three Stone Caſes. Here in the dioceſe of Bergen, where carriages can be very little uſed, it is not thought worth the while to build ſtrong and laſting bridges. In many places, the manner of their conſtruction is thus; where the narrowneſs and rapidity of the current will not admit of ſinking any ſtone caſes, thick maſts are laid on each ſide of the ſhore, with the thickeſt end faſtened to the rocks of the mountains; one maſt being thus laid in the water, another is placed upon it, reaching a fathom beyond it, and then a third or fourth in the like progreſſion to the

* Ubi Nilus ad illa, quæ catadupa nominantur, præcipitat ex altiſſimis montibus, ea gens, quæ illum locum accolit, propter magnitudinem ſoni, ſenſu audiendi caret. Somn. Scipion. 5.

middle of the ſtream, where it is joined with another connection of maſts from the oppoſite ſide, and this without any other cement than their contact, ſo that in the paſſage over it, eſpecially in the middle, the bridge appears to ſwing, which, to thoſe who are not uſed to it, appears ſo dangerous, that they alight from their horſes till they imagine themſelves out of danger.

## SECT. XVI.

Eaſy way of travelling in the winter on the freſh-water.

The beſt paſſage in winter is by the rivers, eſpecially up the country. As they are every where deeply frozen, the peaſants find a very great conveniency in them for conveying their goods to the towns in their ſledges, carriage being ſcarce practicable over the heights of the mountains. The travellers are conveyed in theſe ſledges with great eaſe and expedition, for though the Norway leagues are very long, yet they go ſecurely at the rate of one league in an hour. Theſe winter roads, likewiſe yield an agreeable proſpect, in the contraſt of the green valleys of pine and fir trees, with the ſnow, though the glaring of the latter, eſpecially in ſunſhine, ſoon offends the eye, and here a piece of crape over the face is of double ſervice, as it likewiſe preſerves the ſkin from the piercing froſt.

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# CHAP. IV.

## Of the Fertility of Norway in variety of Vegetables.

SECT. I. *Great difference in the nature and quality of the ſoil.* SECT. II. *The Fertility greater than foreigners imagine, and chiefly from two cauſes.* SECT. III. *Method of Agriculture and poſſibility of its improvement.* SECT. IV. *Different kinds of grain, as Rye.* SECT. V. *Barley.* SECT. VI. *Oats.* SECT. VII. *Peas and Vetches.* SECT. VIII. *Wheat and Buck-wheat.* SECT. IX. *Hops, Flax and Hemp.* SECT. X. *Graizing and Hay.* SECT. XI. *Excellent roots and garden vegetables.*

## SECT. I.

Great difference in the nature and quality of the ſoil.

HAVING hitherto diſcourſed in general of the air, ſoil, and water of Norway; and having under farther conſideration, the animate and inanimate ſubſtances exiſting in thoſe elements, it appears moſt regular to proceed to the natural fertility of the earth

earth, in corn, graſs, roots, trees, and every other kind of vegetables. I ſhall give accounts of all theſe from my own knowledge, or the credible informations of others, not doubting withal, but my ſucceſſors in this work, will finiſh it with much leſs trouble, and much greater perfection; tho' to give univerſal ſatisfaction, is beyond the moſt extenſive knowledge, and the moſt correct judgment.

Having ſpecified the diverſities of the ſoil and air in Norway, which poſſibly are greater than in any other country, it will appear, that vegetable products, as dependant thereon, vary in like manner. Norway is almoſt every where ſo unfit for agriculture, tho' not for paſture, that upon a meaſurement of the plowed lands, I do not think, the proportion, in reſpect to the meadows and woods, the waſtes and barren mountains, would be greater, than as one to eighty; and if the peaſants of Norway were not conſiderably aſſiſted by the great fiſheries on the ſea-coaſts, and the timber and charcoal-trade for the mines, the graziery, and the liberty they have of killing game, the country could not be ſuppoſed to furniſh ſubſiſtance for above half the inhabitants; for as theſe viſibly increaſe, and ſpread themſelves year after year, ſo ſeveral tracts of uncultivated land, have been broke up and tilled; and ſeveral woods likewiſe have been burnt, and the land turned to huſbandry; yet, with all theſe expedients, there would ſtill be a ſcarcity in thoſe places, where the nature of the earth and the rocks are not capable of any cultivation. Another misfortune is, that in ſome parts of the moſt fruitful provinces, as Gulbrandſdal, Oſterdal, Soloer, and elſewhere, the grain is ſubject to miſcarry by ſudden froſts, ſo that one day it may ſeem in a flouriſhing ſtate, and afford the pleaſing promiſe of a plentiful harveſt, but by the nipping cold of one night, it appears withered the next day, and drooping, ſo as never to attain to its proper ripeneſs. It is to be obſerved, moreover, that in every century, as far as can be aſcertained from tradition, the country is viſited with ſome unfruitful years, which are remarkably ſo, and happen two, three, or four, ſucceſſively; ſuch were the years from 1740 to 1744; when the ſun ſeemed to have loſt all its heat and genial power, the vegetables grew, but ſhort of their natural height, and budded, and bloomed, without bearing. In thoſe years, the trees, likewiſe,

Pernicious night froſts.

failed in their growth and uſual verdure, having no ſhoots at all, at the tips of the twigs. Moſt of the grain, that was ſown, alſo periſhed, yielding only empty ears, inſomuch that the diſappointed peaſant was reduced to extreme diſtreſs, from the uncertainty of any advantages in the labours and charges of the enſuing year. Something like this, tho' in a leſs degree, was felt in other places, during the above-mentioned calamitous years *.

All theſe diſadvantages do but furniſh more matter for adoring, with the greater admiration, the impartial benignity of the Almighty Creator, in his proviſion for the ſuſtenance of the people of Norway, not only in the variety of other means of ſupport, which ſhall be ſpecified in their proper place; but by their harveſts, and ſucceſs in agriculture, which, however inconſiderable, in reſpect to thoſe of other countries, are much larger than a foreigner would conceive, till informed by an actual ſight of them. Who would imagine, that Norway, in moſt years, ſhould have ſome thouſands of tuns of its own grain and produce, to ſpare for the adjacent provinces of Sweden? And who would imagine the fact, which Arn. Bernſen reports in his book on the fruitfulneſs of Denmark and Norway, that ſome farms, even in the diſtrict of Nordland, beyond Drontheim, expend forty, nay, ſome an hundred tuns of barley in ſeed, and that of a good kind, tho' not equal to the rye of this part of the country, which is accounted preferable to that of Poland? This fertility of Norway, even in its moſt northern Provinces, as far as Finmark, to the 68th degree, cannot but excite the admiration of thinking perſons, ſince a line being drawn from the midſt of this fruitful province of Nordland, that is, from the diſtrict of Salten, eaſtward, over the mountain Kolen, into Swediſh Lapland, namely, Pitha-Lapmark, or even more to the ſouth, the country is one wild barren waſte, tho', according to Mr. Hogſtrom's moſt ingenious and authentic deſcription of Swediſh Lapland, lately publiſhed, colonies, or new inhabitants, have, at the public charge, and by order of the government, been ſent to cultivate theſe barren parts.

Abundant corn harveſts in ſome places.

* If we recollect the weather from the year 1740 to the preſent year 1747, it muſt be allowed very extraordinary. The winters were long and ſevere, the ſummers but moderate, with little rain in many places, an almoſt continual ſtrong wind at north-eaſt. It were to be wiſhed that the naturaliſts would favour the public with their thoughts on ſo intereſting a ſubject. Hamb. Mag. B. 1.

For

For the cauſe of ſuch a great difference, in point of fertility, at an equal diſtance from the line, the reader muſt be referred to what I have ſaid in the firſt Chapter, Sect. VI. concerning the difference of the cold and warmth, the ſharp and mild air in the dioceſes of Aggerhuus and Bergen, which, tho' manifeſtly in a parallel latitude, differ as much in reſpect of cold and heat, as if they were ſituate ten degrees from each other. This, as I have before obſerved, is to be attributed to the warm vapours of the ſea, which, ſpreading themſelves over the weſtern ſide, moderate the winters there, and have the ſame effect in all the maritime diſtricts, to a hundred Norway miles north of Bergen; ſo that in fruitfulneſs, Nordland ſurpaſſes even this dioceſe, though with the additional advantage of better vallies, and larger tracts for tillage*; whereas, Swediſh Lapland, which lies in a direct line behind Nordland, is deprived of theſe warm vapours by the Koelen range of mountains, which intercepts them, as Filefield does in the dioceſe of Bergen.

Next to that of Nordland, the moſt fruitful provinces in the dioceſe of Drontheim, are Inderherre and Nummedal; in that of Bergen, Sognifiord and Vaas; in that of Chriſtianſand, Jedderen, Ryefylk, Raabygdelag, and the lordſhip of Nedenes; in the dioceſe of Aggerhuus, Hedemark; all which are not in the leaſt inferior to the beſt corn countries in Denmark; and beſides theſe, are Hadeland, Toten, Romerige, Ringerige, and Gulbrandſdale. All theſe territories uſually yield grain enough, not only for the ſupport of their inhabitants, but a large ſurplus, which they diſpoſe of among their neighbours, and even among the Swedes. On the other hand, in many places, a third or fourth of the inhabitants are not in a capacity of laying up a neceſſary quantity; which deficiency, however, is otherwiſe compenſated to them.

## SECT. II.

It is moreover, remarkable, that the corn-grounds throughout the dioceſe of Bergen, which, on account of the many mountains, Norway more fruitful than foreigners imagine.

* Agreeable to this, is what Thomas Bartholin ſays of the cauſe of the mild winters in Ferroe, which lies in the middle of the north-ſea: "Aqua inſulas Ferroenſes allabens, quanquam per ſe frigida ſit, ſalſedine tamen ſua ex perpetuo motu plerumque producit hyemem temperatam." Acta Med. Hafn. ad ann. 1673. Vol. III. p. 371.

are few, as to the beſt of my knowledge they, in moſt places, never lie fallow, but are every year plowed and ſowed, bear all kinds of grain, barley and oats eſpecially, and not only ſix, eight, or ten fold, but in ſome places with a much greater increaſe *; and the corn is generally allowed to be longer, and the ears fuller, than what is imported from Denmark and Germany, being inferior only to the Engliſh corn, which the Norwegians prefer to any other. I ſhall ſoon come to treat of every ſort of grain, under its particular head.

Cauſe of this fertility.

As to the cauſe of this fertility, which may appear very ſtrange to foreigners, tho' it be ſtrictly true, I ſhall give them the following indiſputable account of it: The Almighty Creator, ſo wiſe and bountiful in his œconomy towards mankind, and whoſe greatneſs appears moſt conſpicuouſly in the ſlender means he ſeems to make uſe of, appears to confer a double bleſſing on thoſe ſmall parcels of good land called cloſes and fields, which in other parts are looked upon only as little incloſures, and ſeparated ſpots; yet he does not effect this in any ſupernatural or immediate manner. We know, that moiſture and heat, are the two great promoters of fertility, and the fields of Norway enjoy a ſufficiency of both †. They are not liable to ſuch frequent and long droughts as other countries, being ſupplied either by rains or ſprings, gently iſſuing from the mountains, or the meltings of the maſſes of ſnow on the tops of the mountains. Beſides, the ſnow-water, as well as the ſnow itſelf, is of a rich nature, ſo as by ſome to be thought a kind of manure. And when the fields begin to be parched, which is chiefly in the vallies, by the reflection of the ſun, they are more eaſily refreſhed by watering than in other countries, as being few, and of no great extent. In ſome parts, particularly Guldbrandſ-

* Mr. Lucas Debes, in his account of Ferroe, p. 196, ſays, that a tun of corn-ſeed often yields twenty or thirty tuns of corn, yet is this in the main but a ſmall matter, amidſt ſuch a ſcarcity of corn-ground, and where few can ſow above a tun or two.

† "Tanta eſt ſoli cœlique fœcunditas interrupes boreales, ut ſemina terræ commiſſa multiplici fœnore agricolas beent. In inſulis Ferroenſibus, ex unico hordei grano, quinquaginta culmi cum totidem ſpicis excreſcunt, granis turgidi, paucitatem terræ N. B. uberi proventu reſarciente natura. Non fabulas narro. Ipſe culmos vidi et manibus hic palpavi." And in another paſſage ſoon after: "Ratio fertilitatis borealis ex nivibus repetenda terram imprægnantibus, et ex ſolis radiis, qui inter rupes fortius agunt. Et quanquam rupibus ſuperſtrata terra profunda non ſit, ea tamen recipiendis fovendiſque radicibus frumenti ſufficit, quoniam, ut Theophraſtus docet, Lib. 1. de Cauſ. Plant. c. xxii. plures quidem frumentum radices capeſſit, ſed non alte deſcendunt." Th. Bartholin, Act. Med. Hafn. Vol. 1. p. 66.

dale,

dale the peaſants, which according to Tavernier, is alſo practiſed in Perſia, have contrived aqueducts from the upper grounds to the lower, Theſe aqueducts are formed of hollowed timbers, which are not very expenſive, and are carried on from the neareſt ſpring to the field; out of theſe the water is thrown in ſhovels over the field, after the manner uſed at ſea for wetting the ſails, that they may draw the better and hold more wind.

As to the other principal cauſe of this fertility, I have, in the firſt chapter on the climate, ſhewn, that by the compreſſion of the rays of the ſun, collected betwixt the mountains, as betwixt the lofty houſes in Copenhagen, the ſun is extremely hot, or rather ſo intenſe, that without the ſummer breezes daily blowing from the ſea along the creeks, whereby this heat is tempered, it would of all things be the moſt pernicious to the ploughed land. Hence our harveſt is as forward, as theirs in Denmark or Lower Saxony; though our ſeed-time be later; yet the nights being ſhort, the ground remains in a continual warmth, thus the growth of the corn advances without any check or intermiſſion, that within the ſpace of nine weeks the farmer has houſed his corn. For the better clearing and confirming this point, I ſhall ſet down the words of a conſummate Swediſh naturaliſt, the celebrated Linnæus, in his diſſertation on the natural planting of Vegetables. "Towards the pole the ſummers are ſhorter, and the days longer. The ſummer in France being longer than in Lapland, the fruits ripen ſooner in Lapland than in France. About Paris the cool nights are longer, during which the growth being checked, they require the longer time for their full maturity; whereas in Lapland, the ſummer having little or no night, the fruits are in an uninterrupted progreſs. In 1732, for inſtance, corn was ſown on the 31ſt of May, and in the barn by the 28th of July, having attained its due ripeneſs in 58 days. In the ſame year rye was likewiſe ſown on the 31ſt of May, and cut the 5th of Auguſt, ripening in 66 days; this happened in Lulaa Lapland, whereas further ſouth there was no ſuch forwardneſs."

Heat betwixt the mountains.

Tranſactions of the Swediſh acad. of ſciences, Vol. i. p. 22.

## SECT. III.

Agriculture in Norway, is not ſo burdenſom to the farmer as in other parts; for here he does not toil in the fields of an oppreſſive

ſive lord, but the fruits of his labour are his abſolute and certain property. But, on the other hand, it happens in many places to be attended with great labor and inconvenience, the fields conſiſting of little ſpots of ground among the rocks, many of which muſt be dug, inſtead of being plowed, and particularly here, in the dioceſe of Bergen, where the ſoil is leſs fruitful, and affords but few places, where the plow can be uſed, as it is in the eaſtern provinces *. The harveſt alſo is not without its difficulties; the grain, according to the old cuſtom of the peaſants, not being mowed with a ſcythe, except about Chriſtiania, where it is lately come into uſe, but cut with a ſickle; and this is their practice even in thoſe few places where the ground is level and clear of ſtones; for the corn often grows ſo thick and cloſe, and the ſtalks are ſo apt to bend under the weight of the ears, that the reapers, both here and in the marſh-lands, graſp the ſtems with one hand, cutting them with
Plate VIII. the other, and immediately bind them in ſheaves, which never lie long on the ground; for, that they may be thoroughly aired and dried, a great number of poles five or ſix ells long are ſet up in the field, and ſix or eight ſheaves hung to each pole, ſo that ſeveral days rain, if it ſhould fall, would ſoon be exhaled and diſcharged, and then the corn is houſed. In this part of the harveſt-work no waggons are uſed, except on the frontiers, where waggons have been introduced, but inſtead of them, the Norway peaſants uſe ſledges, for they are prejudiced againſt any other vehicles, even in places where waggons might eaſily travel, and though their work would be performed with greater eaſe and expedition. But in this and every thing elſe, they are ſo ſuperſtitiouſly tenacious of the uſages tranſmitted to them by their forefathers, that they will not venture to remove a ſtone, which their fathers had ſuffered to lie. This ruſtic bigotry, which, more or leſs, prevails every where, is a great obſtruction to public utility, counteracting all improvements in agriculture, the peaſants here being more inclined to fell timber to ſerve in the fiſheries, and the like, than to clear and improve their lands. However, this error gradually loſes ground, ſince from the peaceable ſtate of

* In ſome places where the ground is very ſtony, a crooked ſtick with an iron at the end is made to ſerve inſtead of a plow, as this yielding eaſier to the ſtones, is not ſo ſubject to break.

affairs

Plate I.



Hay and Corn Harvest

Plate II.

affairs, an eſtate is come to be divided into ſeveral parts, three or four families now procure a comfortable ſupport from a farm, which before was a ſubſiſtence only for one *. This has encouraged a diligent enquiry after ſpots of ground proper for ſowing; ſtones begin to be removed, fens and moraſſes are drained by trenches, which are here called Veiter †, for carrying off the water, and are uſed in the newly cultivated grounds in many places, tranſverſally, underneath them, an ell or two deep in the ground, where they are covered with earth, and lined with ſtones. The peaſants are likewiſe improved in their knowlege of manures, and diligence in the uſe of them, ſuch as fern and other large weeds, heath or moſs, ſea-graſs, and other ſea vegetables, likewiſe a kind of reddiſh earth, all which hath in many places had the good effect of enriching the worſt and moſt unpromiſing lands. With reſpect to this ſignal increaſe and advancement of agriculture in this century, Mr. Peter Schrœder, ſuperintendant and miniſter of Karmen, in the dioceſe of Chriſtianſand in a letter to me, among other things, mentions the following particulars; "the advantages this country has received from the indefatigable application of the inhabitants, within theſe forty or fifty years, in the improvement and augmentation of their arable lands, is beyond credit. Heretofore the farmer, who by his yearly tillage could ſupport his family till Chriſtmas, was accounted a notable man and in good circumſtances, whereas now, in thoſe years, when God does not puniſh the land with any remarkable ſcarcity, the inhabitants throughout this diſtrict, are, from their own grounds, not only plentifully provided with malt, barley and oats, throughout the whole year; but ſend ſome hundred tuns to market to Bergen, Hardanger, and Stavanger, &c." In another letter this gentleman, who is well experienced in huſbandry, communicates to me, at my requeſt, ſome obſervations on the proper application of the ſeveral kinds of manure to the quality of ſoils,

* Even in this Dioceſe, where we have but little room for tillage, large farms are parcelled out to ſeveral farmers, and from the number of houſes make the appearance of no mean village; Oppedal, for inſtance, an eſtate in the pariſh of Knitzerviig in Hardanger, which in the land-tax is aſſeſſed at 12 lobers of corn, that is 24 tuns; maintains 16 families, and theſe, according to the report of the miniſter, conſiſt of 130 ſouls.

† An experienced countryman, told me, that, by introducing theſe veiters in his lands, he had doubled their produce.

which I likewiſe eſteem worthy of public notice: " If the ſituation of a ſwampy field be ſuch, that the cold moiſture cannot be carried of by veiters, the natural reſource is the warm and dry dung of horſes and ſwine. Where the ſoil is dry and deep enough, ſheeps-dung is the manure for barley; as cow or ox dung for oats; but if very hungry, ſandy or hilly, for ſuch there is no better manure than the earth of molehills in the ſwampy countries, which at harveſt is collected for this purpoſe. By this diſtribution of every kind of dung or manure, varied according to the ſoil, all the plowed lands may in time be improved doubly, and be brought nearly to an equal goodneſs.

## SECT. IV.

All kinds of grain are ſown in Norway, though not every where to equal advantage. In Hedemark, Jeddern, and in Nordland, rye thrives beſt, but the very beſt is the burnt rye, which is ſown where woods have been burned for that end, and the aſhes left as manure: They likewiſe ſow vœrling or ſpring-rye, and great quantities of both are uſed in Sondenfield, ſince the arrival there in 1624 of ſome Rye-finlanders, as they were called; for theſe inſtructed the peaſants in this method of converting their woods to arable uſes, and manuring the land with the aſhes. However profitable this may be, where the woods will bear ſuch a conſumption, yet it is detrimental and prohibited in other parts. The apparatus or method of proceeding is as follows. A peaſant having found out a ſpot, which will anſwer to the ſowing of half, or a whole tun of ſeed, he fells the wood, and leaves it on the ground two years, till it be throughly dried. When he propoſes to ſet fire to it, which is generally about midſummer, he waits till he obſerves clouds, which promiſe him rain, his ſucceſs in this caſe, depending thereon. Yet it frequently happens, that many are the dupes of a weatherwiſe neighbour's conjectures, for one has no ſooner ſet fire to his wood, than another, relying on his judgment, does the like, and ſo on, that ſometimes the flames and ſmoak of theſe fires are ſeen at once throughout a whole country. The wood being burned as much as poſſible, the greater pieces quenched, and the leſſer, together with the ſurface of the ſoil, the moſs, and ſmall roots being reduced to aſhes, without ſtaying till the earth

earth be cooled, the ſeeds are thrown on the aſhes, ſtill ſo hot that they give a ſmart crack, denoting that the huſks are ſplit. What remains is the expected rain to ſoak them; and if this actually happens, the peaſant may ſit down in the certain hope of ſuch an exuberant rye-harveſt, as will ſcarce appear credible to foreigners, tho' upon enquiry it will be found an undoubted matter of fact; for, without any extraordinary accident, a ſingle buſhel of burnt rye, will produce ſix, ſometimes ten tun of the choiceſt rye*. This is certainly the effect of the concentration of the vegetative ſpirit in the aſhes, which, before it can evaporate, impregnates the corn with ſuch wonderful fecundity. And it is on this vegetative ſpirit that the chemiſts ground their regeneration of burnt plants, tho' in ſuch an open place, a great part of them muſt certainly be diſſipated by the intenſeneſs of the heat. Theſe conflagrations ſometimes prove the occaſion of dreadful miſchiefs, as in the year 1739, at Oeyer in Guldbrandſdale, ſome houſes were burned, and ſeven perſons periſhed in them, proper notice not having been given to the neighbourhood. The knops of the pines ſhoot along the air like rockets, and have been known to ſet fire to houſes at a conſiderable diſtance. When the fire firſt ſeizes the green wood, it is not only very violent, but attended with a boiſterous wind and dreadful roarings.

## SECT. V.

Every part affords barley; but the beſt places for it are Nordland, the dioceſe of Aggerhuus, the lordſhip of Nedenes in the dioceſe of Chriſtianſand, and Sognefiord in that of Bergen, where excellent malt is made of the common, and likewiſe of a particular kind, called David's-barley, or Heaven's-corn. This barley, which in threſhing loſes its huſk, and very much reſembles wheat, the peaſants term Thor-barley, poſſibly from the opinion of the ancients, who, in their chimerical ideas of the Heaven, or Walhalla of the idol Thor, where the Cup of Health went briſkly round, imagined this corn to be fit for the banquets of the gods, and heroes. Dr. Lochſter, in his Diſſertation de Medicamentis Norvegiæ, &c. extols the liquor made of it, both as palatable and Barley.

* A buſhel, or in Daniſh a ſkiepp, is the eighth part of a tun, thus the produce of one buſhel in ſeed is forty-eight, ſixty-four, or even eighty.

whol-

wholſom. Palmam, ſays he, quoque reliquis præripit decoctum hordei cœleſtis, vulgo Himmelbyg grato tam ſapore quam effectu ſe commendans. Arn. Bernſen, in his book above quoted, on the Fruitfulneſs of Denmark and Norway, pretends that ſometimes in wet years, the Norway barley degenerates into oats; whilſt others imagine, that good oats, eſpecially in Hedemark, improve into barley. But, without further proof, ſuch anomalous metamorphoſes appear to me ſcarce credible *, and my opinion is, that what firſt gave riſe to this notion, was an accidental and unobſerved mixture of a little barley with oats, or of oats with barley, which in ſome years, happened to thrive better than the intended grain, and this unexpected increaſe was miſtaken for a tranſmutation.

Page 294.

Wonderful changes.

## SECT. VI.

Oats.

Oats, are the grain of the moſt general uſe in Norway, both for the peaſant's bread, which is made of it, and in ſome places for a kind of malt. It is alſo much larger, whiter, and mellower, than in other countries, and thrives in thoſe lands, where, by reaſon of moiſture or poverty, no other grain will anſwer. That oats are no leſs nutritive than rye, may be judged not only from the horſes, but the ſingular ſtrength and vigour of the Norway peaſants. But amidſt the great benefits derived to our peaſants from good oats, in ſome places, eſpecially in Ryefylke, they complain loudly of a kind of wild or ſpurious oats, which the French call folle avoine. Where once this takes root, it is extremely difficult to be extirpated, over-running large tracts of land, deſtroying the good grain, and proving as miſchievous, as thoſe complained of in Virgil,

Infelix lolium, et ſteriles dominantur avenæ.

* This however is eſpouſed by Mr. Frederic Hoffman in theſe words, "Who has ever perſpicuouſly demonſtrated, by what means ſome plants come to be transformed into other kinds, for inſtance, wheat into tares, good oats into wild, a nutmeg in Europe into a walnut, &c." See his Rational Phyſical Theolog. Sect. xxvii. p. 96. Whilſt I am writing this, a worthy friend of mine aſſures me, that to ſatisfy himſelf in this doubt, he ſowed a can of the fineſt barley, without a ſingle grain of oats among it; yet, at the harveſt, of two cans of barley, one and a half proved oats. So I leave the matter without further diſcuſſion.

## SECT. VII.

White, grey, and green peas are ſowed, tho' not to any great quantity, both in Suden and Nordenfield, the ſoil being loomy; but the beſt are produced in the diſtrict of Sognefiord in this dioceſe, where they were introduced by a clergyman, about the middle of the laſt century; and his experiment having recommended itſelf to imitation, I ſhall here inſert a ſhort account of it. Mr. Jacob Kirſebom, miniſter of Sognedal*, reading in Sim. Paul's Flora Danica, of an American ſmall pea, under the name of Piſum de gratia, one of which being ſet in M. Klingenberg's garden, near Hamburg, had yielded 324, reſolved to ſend for ſome, and on trial found the fertility of his Norway-garden far ſuperior to that near Hamburg; it yielded him 610 peas for one †. Since which time the peas of thoſe parts have been very much in vogue here. Peas.

Vetches, of which ſuch quantities are ſown in Denmark, as provender for horſes, Mr. Jonas Ramus claſſes among the vegetables of Norway; whence I conclude that it muſt be far up the country where they grow, having, to the beſt of my remembrance, never ſeen any in theſe parts. In Valders they are ſaid to grow ſpontaneouſly, and ſow themſelves, but in no great plenty. Vetches.

## SECT. VIII.

Wheat, and Buckwheat alſo grow here, but not in many places, tho', it is not improbable, that upon trial, the growth of it might be conſiderably increaſed. Mr. Hans Caſten Atche, miniſter of Leyerdal, in this dioceſe, being a native of Lolland, Wheat.

* There is likewiſe a pariſh in the dioceſe of Chriſtianſand, which bears the name of Sognedal, and which I am apt to think was M. Kirſebom's reſidence, and conſequently where he firſt brought peas in vogue, as I do not meet with his name among the clergy of this dioceſe.

† Piſum minus, quod de gratia rocant, ex America ad Europæos tranſlatum centuplum fructum ferre fama eſt. Atteſtatur D. Simon Paulli, vir magnæ famæ et experientiæ, Claſſ. III. Quadripartit Botan. in viridario nobiliſſ. Klingenbergii prope Hamburgum, ſuccreviſſe piſum hoc de gratia trecentorum et vigenti quatuor piſorum fertile. Quo exemplo invitatus Dom. Jacobus Joach. Kirſebom, paſtor in Sognedal Norvegiæ, ex Hollandia iſta piſa ſibi afferri curans, recepit in Norvegia ex ſingulo piſo terræ ibidem commiſſo, 610 piſa, quemadmodum ad venerandum ſuum parentem ſcripſit, d. 2 Junii 1672, cum D. Joach. Paulli laudabili propoſito patriæque inſerviendi voluntate Indos Danicos Orient. Navi petiturus prope Hitteroë Norv. vento contrario ſubſiſteret. Thom. Barthol. Acta Med. et Philoſ. Hafn. vol. I. p. 66.

which is celebrated for its wheat, procured ſome from thence to ſow in his grounds, where he tells me, it anſwered both in quality and quantity to the produce of Lolland. As to Buckwheat, the ſowing of it here, appears too hazardous, both from the ſhortneſs of the ſummers and the night-froſts, particularly towards the eaſt, which this wheat cannot ſtand, being of Oriental origin, in reſpect of the ſouthern countries, and as ſuch, is by the French called Blé Sarazin. However, ſome very good of this kind has been produced in Hedemark, and even in this dioceſe.

## SECT. IX.

Hops. Both the north and ſouth parts have hop-gardens, but the beſt are thoſe of Hedemark and Solloer. I have alſo ſeen very good at Sundmoer. Flax and hemp likewiſe grow here, but in a very ſmall proportion to the demand for them. The weſt ſide, particularly, affords little or none; tho' here it would be well worth while to encourage the ſowing hemp, on account of the great quantities uſed in making fiſhing-nets.

Flax and hemp.

## SECT. X.

Graſs. From the corn-land, I proceed to the paſturages or meadows, with which Norway is ſo liberally bleſt, as not only to equal other countries, but to ſurpaſs many. A proof of this is, that in moſt of the provinces no fleſh, butter, cheeſe, &c. is imported, except ſome bacon from Denmark, the good lands being too valuable to turn ſwine into them; whereas, every year from ſeveral parts, and chiefly Bergen, there is a very conſiderable foreign exportation of thoſe commodities, eſpecially ſuet and butter. The beſt and moſt nutritive paſturages are in Lofoden, Veſteral, Vas, Valders, Hallingdal, Tellemark, and the lordſhip of Nedenes. The Norway-cows are not indeed of the ſize of thoſe in Denmark, and a conſequence of this is, that they alſo yield leſs milk; but as to their fatneſs, thoſe of the marſh-lands excepted, Denmark does not afford better; and accordingly the farmers here keep a greater number of cows. The beſt dainties among the Norway peaſants conſiſt in milk-meats, and variety of cheeſes, on which they

they ſpread butter as on bread; beſides which, they regale themſelves with Draule, Myſſebrüm, Gummegrœd, and other white meſſes.

How well the Norway graſs agrees with the ſheep, appears from Mr. Berndſen's book of the fruitfulneſs of Denmark and Norway, where he ſays, that it is no uncommon thing for twenty-four or thirty-two pounds of ſuet to be found in one ram; and it is a ſtriking inſtance of the ſucculency and increaſe God has been pleaſed to beſtow on the Norway graſs, that a very ſmall valley, or dale, ſuffices for the ſupport of ſeveral families, and their cattle; Davigen in Nordfiord, for inſtance, is not above half a Norway mile in circumference, yet as Mr. George Krog the miniſter there affirmed to me, it feeds very near two hundred people, and twelve hundred cattle of different kinds.

It is however to be obſerved, that in the ſpring the cattle do not graze in the vallies and on the ſkirts of the mountains after Whitſuntide; for when the ſeed time is over, and the people can be ſpared, they are driven on the ſides of the mountains to Sacters, or to Stols, as the country phraſe is, which at that ſeaſon afford them ſufficient fodder, the ſnow being no ſooner melted than the graſs appears, at leaſt a quarter of an ell high, grown under the maſſes of ſnow, from which it derived both warmth and moiſture. When the diſtance is within a Norway mile, the milk is brought home twice a day; but if the diſtance be two or three miles to thoſe paſtures, they keep Sæterboe or huts on the mountains, where a maid-ſervant, diſtinguiſhed by the name of Buedye, conſtantly lives, for the ſecurity of the cattle againſt wolves, bears, lynxes, and other wild beaſts, who generally fly from ſuch a weak keeper. She is at the ſame time employed in making butter and cheeſe, with which ſhe goes down to the houſe once or twice a week. Regulations againſt diſputes and quarrels with neighbours or borderers, concerning this general right of common on the mountains, are laid down in the Norway Statute-book †.

† According to Dr. Shaw, both the milk and fleſh of the eaſtern cattle, fed on the mountains are the beſt; beſides, that thus the whole country is turned to uſe, another conſiderable benefit is, that the milk of cattle thus fed is much fatter and ſweeter, as the fleſh is likewiſe more palatable and nutritive. Travels to the Levant, Tom. II. chap. iii. p. 62.

The graſs in the vallies, or near the houſes, is cut for hay, and though in moſt places it be mowed with a ſcythe, yet in ſome, like the grain, it is reaped with a ſickle; after which it is hung to dry on heſgiers. Theſe heſgiers are a moveable garden, conſiſting only of poles faſtened together, both in the length and breadth, by birch twigs, where the hay dries much better, and the rain evaporates ſooner, than when left to lye on the ground *. The peaſant dungs his meadows as well as fields, though the former but ſlightly. When the moſs is grown ſo high, as to obſtruct the growth of the graſs, whereby very great damages are done in many places, the experienced huſbandman is not without a remedy, either plowing up the meadow to deſtroy the moſs, or ſtrewing it over thick with ſand, if any can be had in the neighbourhood. But according to the before-mentioned Mr. Peter Schroder, who is a very experienced huſbandman, nothing is more certain and effectual for this purpoſe, than turf-aſhes, where turf is burnt, or in a woody country to burn turf merely for the ſake of the aſhes, and lay them on thick over the meadows, which are thus damaged by the luxuriancy of the moſs. For the firſt year indeed this method makes no great alteration, but in the following it is recommended by the moſt happy effects, producing the fineſt and melloweſt graſs, intermixed with many ſalubrious flowers. The ſeveral kinds of greens growing here beſides the common ſort, are holly, quick, wild tanſy, ruſhes, ſedge, gooſe-oats, bienſen, (ruſhes) ſheer-graſs, iglegras, ſtoergras, (large graſs) or tourgras, of which ſome particulars ſhall be obſerved in the ſequel.

I am not acquainted with the kind of graſs or plant with ſhort broad leaves, to which ſome here give the name of Viola Canina, but by it, and ſome leaves of ſorrel, the lives of two brothers were wonderfully ſupported for ſeveral days. The ſingularity of this ſtory is ſuch, that I cannot forbear inſerting here a ſhort abſtract of it, for however it may appear a digreſſion, yet it is not very unuſual, in an account of the ſeveral plants of a country, and it is beſides an intereſting fact, as it furniſhes more than one inſtance of the care of providence over perſons in the extremity of diſtreſs. It may be read more at large in Oluf Bangs collections, p. 508.

* I have ſince been informed, that theſe Hœſgier are uſed only in the dioceſe of Bergen, they not being ſo neceſſary in other parts, where the rains are not ſo frequent.

Olafe

Olave and Andrew Engelbrechtſen, born in the farm-houſe of Toxen, in the pariſh of Guldſdal in Gulbrandſdal, brothers and ſtudents, ſet out on the firſt of Auguſt, 1652, from the ſaid houſe of Toxen, to take the diverſion of ſhooting and fiſhing for a few days, in the high mountains, which ſeparate Guldbranſdal from the province of Valders. On the ſecond of Auguſt, after proceeding about four Norway miles, they came to a large water called the lake of Ref, where they ſtayed four days. On the ſixth of Auguſt they were for returning home, but firſt rowed away to a very ſmall iſland in that lake, being but ſixteen paces long and half as broad, to draw up a net which they had ſpread there. Whilſt they were on this iſland, by a ſudden ſtorm at eaſt, their ſkiff broke looſe, and was carried over to the other ſhore; by this accident, as neither of them could ſwim, they ſaw themſelves in extreme danger of periſhing with hunger. After having faſted the firſt day, they were for the ſpace of twelve days, deſtitute of any kind of ſubſiſtence, except only the wild vegetable, which introduced this ſtory, the Viola Canina and ſorrel. Beſides hunger, they had alſo ſevere winds and colds to ſtruggle with, eſpecially in the night, and being but thinly cloathed, as their travelling neceſſaries were on the banks of the lake, they muſt ſoon have periſhed with cold, had not the invention of one of them ſuggeſted to build a little hut of ſtones, where they might in ſome meaſure be ſheltered from the weather. Their next care was to ſearch, if this little ſpot did not afford ſome ſucculent vegetables, their appetite now beginning to grow keen towards the end of the ſecond day; but their firſt ſearches were fruitleſs, at laſt they alighted upon a kind of broad leaved graſs, without doubt Viola Canina, of which, twice a-day, each ate about an ounce, that being all they could find at one time, and as in this extremity they frequently implored the aſſiſtance of heaven, ſo their ſlender repaſts were conſtantly attended with a prayer. They tried alſo the leaves of ſome buſhes but found them too bitter. After thus devoutly eating their pittances of that graſs, their ſpirits and ſtomachs were refreſhed, and the acute pains they felt in their arms and ſhoulders abated. But the moſt remarkable circumſtance in this ſuſtenance was the happy proportion in which it was dealt out to them, and the ſudden reproduction of it; for, according to their own account, which they

A remarkable ſtory.

themſelves publiſhed, from a principle of gratitude to God, and conſequently cannot be ſuppoſed to have adulterated it with a deliberate falſhood, they daily found no more than the above-mentioned very ſmall portion; on the following day, their ſearch was duly anſwered, though they had but the day before torn up all the other graſs, and the moſs itſelf, to form a kind of a bolſter, in their ſtore-hut, and towards the period of their miſery, they met with more than at firſt, but on the twelfth day, when their deliverance was at hand, this eſculent entirely failed them, ſo that not a blade of it was to be ſeen. But on that day they met with ſomething, which had hitherto eſcaped their eyes, tho' their ſearch was confined to ſo narrow limits. This was a little ſpot, all overgrown with ſorrel, which they cleared, and fed on it with a devout cheerfulneſs; yet, when in the evening Andrew Engelbrechtſen crept thither, being unable to walk, he found it freſh grown. It may be ſurmiſed, that this was another ſpot which had not been touched, but to obviate this, he ſays, that they had taken exact notice of the place, having obſerved a piece of wood lying near it. In the mean time, theſe diſtreſſed young men, did not give up all hopes of being delivered by ſome perſons who might reſort, as many did, to theſe deſart mountains for the diverſions, which had drawn them thither. The inſtrument which providence made uſe of for their preſervation was their dog, who after continuing eight days with their little baggage on the ſhore, had returned home howling and moaning: From the grief of this faithful creature it was concluded they had met with ſome misfortune, and a man was immediately diſpatched to the mountain in ſearch of them; coming thither on the eleventh day, he could get no ſight of them, but found their clothes, &c. and from ſeveral marks, he conjectured they had not been there for a conſiderable time, upon which he immediately returned with the melancholy news, that they were probably drowned. On the twelfth day, being the 17th of Auguſt, Olave Engelbrechtſen, appearing to be at the laſt gaſp, his heart throbbing with a violence ſo as to be heard, they ſunk into deſpair, and Andrew, the younger, with what remains of ſtrength he had, cut out on ſome pieces of timber which were moſt in ſight, a conciſe relation of their unhappy fate; and the text, upon which he choſe their funeral ſermon ſhould be preached,

Pſalm lxxiii. ver. 22. and 26. After this they mutually encouraged each other in the hope of eternal felicity, to patience, and perſeverance in faith, jointly recommending themſelves to God, and totally deſpairing of all temporal relief, ſince the above-mentioned herb had failed them. But in the night between the twelfth and thirteenth day of their famine, being the eighteenth day of Auguſt, their hearts were revived, by the ſound of horſes galloping up the mountains; upon which they called out, and being heard, the riders flew to their aſſiſtance, and putting off in their boat, which, as another inſtance of God's paternal care, had received no damage, brought them aſhore. Food being offered to them, the elder brother could eat very little of it, and the little he did eat, threw him into ſuch a diſorder, as after his return home confined him eight days to his bed; however, he ſurvived it thirty-ſeven years. The younger brother found himſelf leſs incommoded, and in the year 1691 drew up this relation, particularly thanking God, that their dog, the ſubordinate means of their deliverance, had not ſwam over to them when they called, and made all the ſigns imaginable, with a view of killing him for their ſuſtenance. I beg pardon for this digreſſion, and reſt the truth of the fact upon the authority of the party himſelf.

## SECT. XI.

All kinds of eſculent and garden vegetables.

After thus treating of grain and graſs, the chief ſuſtenance of men and other animals; the culinary and garden vegetables are the next in order for our conſideration. The common people here, and eſpecially in the country, have very little taſte for theſe, and even the towns and cities uſed to be ſupplied from England and Holland with cabbage, leeks, and other roots. But in this century, eſpecially within theſe forty years, a foreign ſupply is become leſs neceſſary, as gardening grows more into vogue, for which the country is partly indebted, to a very uſeful little piece, intitled, The Norway Horticulture, publiſhed at Drontheim, by Chriſtian Gartner; and a happy experience has ſhewn, that all kinds of eſculent vegetables thrive in our gardens; they produce cabbage of all kinds and colours, green, white, or red, likewiſe green peas, common and french beans, aſparagus, artichoaks, melons, cucumbers, garlic, parſley, ſellary, marjoram, thyme, ſage,

ſage, penny-royal, purſlain, ſorrel, lettice, ſpinnage, endive, creſſes, charvil, dill, fennel, and cummin, the laſt growing wild, eſpecially in Nordenfield; accordingly it has no place in gardens, increaſing ſpontaneouſly to ſuch quantities, that from Chriſtiania, it is exported abroad. Our gardens likewiſe furniſh us with all kinds of roots, as yellow, red, and common carrots, parſnips, radiſhes, potatoes, together with a particular kind of northern turnips called Naper, which the peaſants endeavour to raiſe more than any other, and ſell by tuns in the cities. Theſe are ſometimes very large, and as flat as a diſh. A man of veracity has aſſured me, that not many years ſince, he had in his garden one of theſe Napers, weighing twenty-ſeven pounds. They keep beſt in the little hillocks to be met with among the ſwamps, where they continue entirely freſh, even ſo late as ſpring time.

In order to forward the growth of certain vegetables, where the ſummers are ſhort, the example of burgo-maſter Jurgens of Drontheim, is recommended to imitation in the above-mentioned Horti Cultura, p. 23. This gentleman, at harveſt time, ſet in his garden at his ſeat of Harli, ſeveral plants, which might be ſown early in the ſpring, but which being covered by the ſnow during winter, were alive, and very forward in ſpring. But this method, however adviſeable in the inland parts of the country, will not hold good in the maritime parts, for want of ſuch laſting ſnows, the winters here being rather wet than cold.

## CHAP. V.

### Account of the Vegetables continued.

SECT. I. *Medicinal and other plants and flowers.* SECT. II. *Noxious herbs.* SECT. III. *Wholsom and palatable berries.* SECT. IV. *Of the Norway woods in general.* SECT. V. *A catalogue of Norway trees.* SECT. VI. *Moss upon the trees and stones.*

### SECT. I.

Medicinal and other plants.

FROM the common esculent vegetables, I come to treat of several other kinds of plants and flowers, which Norway affords, some salubrious, others agreeable to the sight or smell; some planted in gardens, others growing wild; and I shall gather my informations either from books, especially that of the accurate Mr. Ramus, or from the epistolary correspondence I enjoy, with persons of parts and candor. Among the written helps, I must acknowledge the preference due to an Herbarium Vivum, written by Mr. Godfrey Henry Langen, who, for various purposes, but particularly to acquire a knowledge of the Norway plants, hath visited several provinces, making some stay in Nordland, an hundred Norway miles beyond Bergen *. From these authorities, I have set down the following, with remarks where I thought them proper and requisite, omitting remarks upon those plants that are common and generally known.

Absinthium maritimum (likewise pratense.) Sea-wormwood.

Acetosa major, minor, fontana. Sorrel.

Acetosella. Petty-sorrel, sheep-sorrel.

Aconitum magnum. Wolfsbane.

Adiantum aureum. Golden maidenhair.

Agrimonia. Agrimony, liver-wort.

Alchimilla s. pes leonis, item minor mathioli, foliis divisis et subtus albicantibus. Ladies mantle; Pa-de-lion.

Allium montanum latifol. Sylvestre, tenuifolium. Broad-leaved mountain-garlick. This, in some places, is so intermixed with the grass, that it gives a disagreeable taste to the milk, as if

* This Herbarium Vivum, is the more valuable for the lively freshness of the colours of the several plants and flowers, beyond any thing of the kind I ever saw; but whether this be the effect of the air, or of the plants themselves, I cannot determine.

garlick had been boiled in it. This ſpecies of garlick, has ſome appearance of may-flowers, and is accounted a better medicine for the ſcurvy, than even ſcurvy-graſs.

Alſine vulgaris, longifol. nemorum hirſuta, folio Euphraſiæ rotundo et crenato, facie ſpergulæ. Chickweeds.

Althea. Marſhmallows.

Alyſſon Germanorum. Madwort.

Anagallis aquatica. Brook-lime.

Angelica vera officinarum, ſeu Archangelica, grows here and there in the vallies, but delights chiefly in the mountains, where it is as plentiful as in Switzerland. The highland peaſant, not only chews it in a morning dried, but likewiſe makes a ſnuff of it. The bears likewiſe are very fond of the ſtem till it grows tough and ſapleſs.

Anſerina, Argentina, likewiſe called Potentilla, from its anodyne and vulnerary property. Wild tanſey.

Anonis non ſpinoſa, flore purpuraſcente. Reſtharrow.

Anthillis leguminoſa. Kidney-vetch, or lady's-finger.

Antirrhinum anguſti fol. cærul. item flore luteo. Snap-dragon, or calves-ſnout.

Aparine et gallium album. Cleavers, and white ladies-bed-ſhaw.

Apios Hieron. Bock. Earth-nuts.

Apium paluſtre, et Sylveſtre. Smallage.

Aquileja flor. cærul. ſimpl. Columbines.

Arnica Zogea lupi: Motherwort. It is in great uſe among the Norway peaſants, againſt pains in the back or limbs, a decoction of it in ſtale beer operating by perſpiration.

Artemiſia vulgar. it. tenuifol. Mugwort, or white-wort.

Aſperula odorifera. Woodroof.

Aſphodelus paluſtr. luteus. Kingſpear.

Aſtragalus flore flavo, radice bulboſa. Silk-vetch, or wild tares.

Aſtrantia Sylveſtris, aquatica, fol. anguſtis, parum hirſutis. Black maſterwort.

Atriplex major, minor, maritima, fol. ſcutato, fœtida. White and ſtinking Orache.

Auricula muris. Mouſe-ear.

Barba

Barba caprina, S. Tragopogon, fl. luteo. Goats-beard.

Bardana. Burdock.

Bellis major, Buphtalmos. Ox-eye.

Betonica. Betony.

Bifolium, latifol. ſine teſticulis et palmis. Tway-blade.

Biſtorta minima. Small-biſtort, or ſnake-weed.

Bonus Henricus. Engliſh Mercury.

Branca urſina, Branckurſine. Bears-breech.

Braſſica Sylveſtris, S. Lampſana fol. integr. et laciniatis. Nipple-wort.

Bryonia. Bryony, Hedge-plant.

Bugloſſa vulgar. it. maritima: Bugloſs, or ox-tongue. This plant grows along the ſhore in Northland, ſo as to be often over-flowed, and thereby contracts a ſaline taſte. Its leaves and ſtem nearly reſembles purſlain, and it runs along the ground to a great diſtance. Mr. Lange does not mention his having ſeen it any where elſe. It is a good vulnerary, and corrects the motion of the blood.

Burſa Paſtoris. Shepherds-purſe. Experience ſhews it to be an excellent medicine for attenuating the blood, and abating a fever.

Calamus aromaticus.

Caltha paluſtris. Marſh-marygold. The Norway peaſants, judge by the appearance of this flower, when to turn their cattle to graze.

Campanula major et minor cœrul. Hedge-bells.

Caprifolium. Honeyſuckle, woodbind. See Periclymenum.

Carduus aculeat. et non, caule angulari et ſpinoſo, it. folio lævi lacteſcente, it. maritimus, it. pratenſis flore purpureo et albicante. Thiſtles of different ſpecies, ſome of which bear corn, which in a time of dearth, may be grinded and baked inſtead of bread; and thus the curſe, *thorns and thiſtles ſhall it bring forth to thee*, is amongſt us converted into a bleſſing. When the thiſtle-tops are full, the peaſant depends upon a good harveſt.

Cariophyllata, flore nutante, it. flore luteo, radice odorata. The herb avens, likewiſe called the herb of St. Benedict.

Cariophyllus marinus. Sea-gilliflower.

Cauda muris. Mouſe-tail.

Chamæmelum vulgare. Camomile.

Chamæbalanus. Pignuts.

Chelidonium majus flore luteo et min. f. rotundo. Celandine, or ſwallow-wort.

Cherefolium. Chervil.

Chryſanthemum ſegetum. Corn-marygold.

Cicuta. Hemlock.

Cicutaria. Baſtard-hemlock.

Cochlearia. Scurvy-graſs. This grows every where in Norway in great plenty, and of ſeveral kinds, as, repens et ſurgens, ramoſa, punctata, et non punctata, it. folio crenato et inciſo, particularly the Cochlearia maritima, which grows along the ſhore, and from the ebb and flood undergoes an alteration, being alternately wet and dry. Its leaves are ſmall, round, and thickiſh, and are juſtly eſteemed the ſovereign anti-ſcorbutic; and the further north it goes, the greater its value; in the ſpring the leaves are very ſmall, but ſowing itſelf again in the ſummer, its leaves towards winter are large and juicy.

Conſolida major. Black-root, or comfrey. This, in ſome places, grows wild.

Conſolida aurea. Another vulnerary herb, uſed for conſolidating wounds.

Convolvulus major et minor. Great and ſmall bin-weed.

Conyza major. Greater flea-bane.

Coriander. Coriander.

Coronopus maritimus. Sea-plantain.

Cotula fœtida et non fœt. Sweet and fœtid wild-camomile.

Criſta galli. Cockſcomb.

Chriſtophoriana, fol. Ranunc. Crowfoot-leaved, herb Chriſtopher.

Crocus Saffron.

Cuſcuta. Dodder.

Cyanus. Bluebottle.

Cynogloſſa flor. cærul. et purp. Hounds-tongue.

Cupreſſus ſylveſtris. Wild-cypreſs.

Dens leonis. Dandelion.

Digitalis flore albo et vario. Foxglove.

Doronicum. Leopard's-bane.

Dulcamara. S. amarà dulcis S. ſolanum ſcandens. Bitter-ſweet.

Echium, facie Bugloſſæ it. ſcorpioïdes majus et minus, flore cærul. Vipers-bugloſſe, and greater and leſſer mouſe-ear. Scorpion-graſs.

Equiſetum ramoſum et non. Horſetail.

Eriſymum. Hedge-muſtard.

Eruca ſylveſtris flore luteo. Wild-rocket.

Eſula vulgaris et major. Great-ſpurge.

Eupatorium canabinum. Hemp, agrimony.

Euphraſia. Eyebright.

Filix mas et fœmina, mollis, cornuta. Several kinds of Fern.

Filicula aperta, ramoſa, florida. Oſmund-royal, and other Ferns.

Filipendula. Dropwort.

Flos Africanus. African marygolds.

Flos Trinitatis. Harts-eaſe.

Fænum Græcum ſylveſtre flor. luteo. Wild-fenugreek.

Fæniculum. Fennel.

Fritillaria variegata. Fritillary.

Fumaria latifolia. Fumitory.

Galeopſis major et minor. Hedge-nettle.

Gallitrichum Sylveſtre. Wild Clary.

Gallium flore albo. White Ladies-bedſhaw.

Gentiana. Gentian, grows in great quantities; is ſuch a bitter, that when eat by the cattle, with whom it is a favourite root, it communicates its taſte to the milk, but withal makes it particularly wholeſom.

Gentianella. Baſtard-gentian.

Geranium gruinum, caule rubic. it. ſylveſtre fuſcum, it. flore cærul. Several kinds of Craneſbill.

Glyzyrrhiza ſiliquoſa. Liquoriſh. An infuſion of it in brandy is uſed as a cordial among the peaſants.

Gnaphalium flore vario. Lions-foot, or ſea-cudweed.

Gramina diverſa. Many kinds of graſſes.

Hedera terreſtris. Ground-ivy.

Helleborus niger. Black-hellebore, bears-foot, ſetterwort.

Hepatica nobilis. Noble liverwort.

Herba Paris quadrifol. Herb true-love.

Herba flammula jovis. Spearwort. A peſtilential herb, pernicious to the cattle in thoſe parts, where it grows plentifully, particularly occaſioning tumors in their mouths.

Herba mercurialis. Mercury, or dogs-cole.

Herba trientalis fl. albo. White triental.

Herniaria. Rupture-wort.

Hieracium facie dent. leon. it. hirſutum, laciniatum, minus ramoſum, ſpinoſum, alpinum. Hawk-weed.

Hirundinaria. Swallow-wort.

Hiſpidita, ſi pes cati. Several kinds of cats-foot.

Hyacinthus racemoſus juncifol. Hair-bells.

Hyoſchiamus albus et niger. Hen-bane.

Hypericon vulgare, it. minus ramoſum. St. John's-wort. It is adminiſtred here both inwardly and outwardly, in many caſes. and with very good ſucceſs.

Hyſſopus. Hyſſop.

Jacea nigra, fol. purpureo. Knap-weed, or mat-fellon.

Impatiens ſi noli me tangere. Touch me not.

Imperatoria. Maſter-wort.

Iris paluſtris fl. cœrul et luteo. Bulboſa, gladialis. Flag-flower.

Juncus varii generis. Several kinds of Ruſhes.

Lagopus. Hares-foot.

Lamium purp. et alb. Dead-nettles.

Lapathum, acetoſum, it. aquaticum minus. Red and white Sorrel, and water-dock.

Lappa perſonata. Great-burdock.

Lavendula. Lavender.

Laureola, fol. deciduo, baccis atrovirentibus. Surge-laurel.

Lens paluſtris. Duckweed.

Lilium convallium, it. minus, ſ. bifol. Lilies of the vallies; theſe flowers are ſucceded by a ſpecies of berries, ripening about harveſt, in colour and figure like ſmall cherries, of a grateful bitter, an infuſion of them in brandy is by ſome accounted very wholſom.

Linaria fl. luteo. Toad-flax.

Lithoſ-

Lithoſpermum vulgare. Grummell or graymill.

Lolium. Darnel, and from its cauſing vertigos called in Norway Svimling.

Lunaria vulgar, et racemoſa. Moonwort.

Lupinus fl. albo, cœrul. luteo. Blue and yellow Lupines.

Lupulus ſylveſtris. Wild hops.

Lychnis latifol. glabris, fol. purpur. it fol. hirſutis, fl. albo, et purpureo, it. viſcoſa flor. purp. it parva ſaxatilis fl. candido it. minima fl. albo. Campions of ſeveral kinds.

Lycopodium, officinar. Wolfs claw-moſs.

Lyſimachia lutea ſpicata, it. vario flore, ſpicata, galericulata. Yellow and hooded willow herb.

Malva. hortens. fl. luteo. ſylveſtr. criſpa. Yellow and other Mallows.

Marrubium nigrum. Black hoar-hound.

Matricaria. Fever-few.

Melilotus vera. Melilot.

Meliſſa turcica. Turkey-balm.

Mentha arvenſis hirſuta. Field-mint; criſpa, curled-mint; aquatica, water-mint.

Millefolium. Yarrow, milfoil.

Morſus diaboli, ſ. ſucciſa foliis glabris, it. fol. parum hirſutis. Devils-bit uſed here for dying yarn green.

Morſus gallinæ. Chick-weed.

Myrica. Tamariſk; this herb though known to be extremely heady is made uſe of in brewing by ſome peaſants, and ſupplies the place of hops in their liquor.

Narciſſus. Daffodil.

Naſturtium, varii generis, agrarium, aquaticum, pratenſe, minus ſcutatum, pumilum. Creſſes of ſeveral kinds.

Nigella. Fennel-flower.

Nummularia ſylveſtris repens. fl. albo. Money-wort. To this tribe probably may belong a Norway-herb, the name whereof I never could learn, but it deſerves notice, a tea being made of it, which is a noble pectoral; its leaves are nearly orbicular, with a very ſmall inciſion, at the fore part, being but half as big as a Daniſh ſhilling, and growing by pairs on a long, thin, round and hairy ſtalk, its flowers are little campanulæ, or bells of five leaves, white on the outſide, but their inſide beautifully variegated with

with red ſpots. The before-mentioned Mr. Lange, a perſon of univerſal experience and curioſity in botany, affirms, that he never met with it out of Norway, and recommends it for pectoral diſorders.

Nymphæa alba, lutea, it. fl. unifol. White and yellow water-lily, its root is uſed in many caſes.

Ocymaſtrum, flore albo et purpureo. Wormgraſs.

Omnifolium. Leaf-wort.

Ononis ſpinoſa et non. Reſtharrow, prickly, and not pricky.

Ophiogloſſum. Adders-tongue.

Orchis latifolia, flore albo, binis et uno teſte, it. tenui fol. fl. albo. Several kinds of ſatyrion.

Origanum. Wild marjoram.

Oxytriphyllon. Sheep-ſorrel.

Pæonia nobil. Male pioney.

Papaver, erratic. et hortens. Wild and garden poppey.

Parietaria. Pellitory of the wall.

Paſtinaca ſylveſtris, latifol. et tenuifol. Wild parſnip.

Pedicularis. Red rattle.

Pentaphyllum petræum, paluſtre, repens. Cinqfoil, or five-fingers, ſeveral kinds.

Periclymenum parvum. Little Woodbine, called in Norway devils-berries, the eating of them being pernicious, on which account, I have omitted them in the different ſpecies of berries, which I ſhall ſpeak of in the ſequel *.

Perfoliatum. Thorough-wax.

Perſicaria maculoſa et non, it. aquatica. Arſmart ſeveral kinds.

Phu vulgare. Common valerian.

Piloſella repens. Common mouſe-ear.

Pimpinella ſaxifraga, fol. rotundo, it. prof. inciſo. Pimpernel ſaxifrage.

Pinguicula. Butter-wort.

Piper aquaticum. Water-pepper. So the ingenious Mr. Lange in his herbarium vivum, calls this vegetable, ſaying at the ſame time, that he never met with it any where but on the ſea-coaſts

* John Chriſtopher Buxbome makes this vegetable originally a native of Norway, in a little memoir concerning it, which is to be found in the Commentar. Academ. Petropol. Tom. 3. p. 268. with this title, De Periclimeno humili Norvegico. Simon Paulli in his Flora Danica, p. 37. mentions it under the name of Caprifolium, Woodbine; annexing a good advice to thoſe who are for making a medical uſe of it.

in Norway, and that he gave it this appellation on account of the taſte of its leaves, which are of a middling length and breadth, rounding towards the end, with ſmall carnation flowers with ſeeds in the calyx like the ſemen pſylli.

Plantago major, caule ſpicato et capitato, minor latifol. it. longifol. it. hirſuta, it. aquatica. Several kinds of plantaine.

Polium montanum. Mountain-poley.

Polygala fl. cæruleo. Milk-wort.

Polygonatum latifol. it. anguſtifol. Narrow, and broad-leaved Solomon's-ſeal.

Polygonum. Knot-graſs.

Polypodium. Polypody, wall-fern.

Potamogeiton. Pondweed.

Primula veris fl. cæruleo. Blue Primroſes. Poſſibly Norway is the only country which produces them of this colour.

Ptarmica hortenſis. Sneeſe-wort.

Pulmonaria. Lung-wort.

Pyrola ſpicata florida et minor uniflora. Two kinds of winter-green.

Radix roſea. Roſe-root: However ſcarce in other parts, here it grows ſpontaneouſly, and beſides its fragrancy and ſightlineſs, is highly ſerviceable in the ſcurvy, though this property of it be little known.

Ranunculus, varii generis, vulgar. et dulc. fl. luteo, it. fl. globoſo, it. paluſtris, it. vernus, ſeu anemone fl. albo ampliſſ. it. aquatic. fl. albo. Several kinds of Crowfoot.

Rapiſtrum agreſte. Charlock.

Rapunculus vulgar. Rampions.

Regina prati ſ. ulmaria. Meadow-ſweet.

Reſeda marina lutea. Yellow Baſe-rocket.

Rhamnus ſolutivus. Buck-thorne.

Ros ſolis, roſa ſolis.

Ruta hortenſis. Garden-rue.

Sabina ſylveſtris. Savin; uſed by the peaſants as a dye.

Salvia ſylveſtris et hortenſ. Sage.

Sanicula alpina. Sanicle.

Saponaria maj. et min. The greater and leſſer Soap-wort.

Satyrium latifol. flor. purpur. et tenuifol. it. maculat. Three kinds of orchis.

Saxifraga aurea. Golden ſaxifrage.

Scabioſa hortenſ. et vulg. Scabious, an herb applied to ſores and impoſthumes.

Scorzonera. Vipers-graſs.

Scrophularia. Fig-wort.

Sedum majus, it. vermiculare fl. lut. et albo. Great and little Houſe-leake.

Sempervivum. Wall-pepper.

Senecio, ſ. erigeron. Ground-ſell.

Serpillum. Mother of thyme.

Sideritis heraclea. Iron-wort.

Sigillum ſolomonis. Solomons-ſeal.

Sinapi agreſte. Wild muſtard.

Siſymbrium aquat. Water-creſſes.

Sonchus aſper laciniat. fl. lut. it. lævis lacteſcens, it. latifol. fl. cærul. Three kinds of Sow-thiſtle.

Sophia chirurgorum. Flix-weed, a vulnerary herb.

Spina criſpa. The barberry-buſh.

Spinachia. Spinnage.

Stæchas. Silver-knap-weed.

Tabacum. Tobacco. In the dioceſe of Aggerhuus endeavours have been uſed for the cultivation of it.

Tanacetum album. White Tanzy. It. vulgare fl. luteo. Common yellow Tanſy.

Taraxacum minus. Leſſer dandelion.

Telephium ſ. craſſula. Orpine.

Teucrium pratenſe, it. minus. Wild-germander.

Thalictrum. Meadow-rue.

Thlaſpi ſcutatum, it. minus, acerrimum. Two kinds of treacle muſtard.

Tormentilla. Tormentil.

Trichomanes ramoſa. Branched-maidenhair.

Tricolor. ſpec. violæ. Panſies or hearts-eaſe.

Trydactylites. alpina, filicis genus. Fingered-fern.

Trifolium var. gen. acidum fl. albo, it. aquatic. fibrinum, it. corniculatum, it. hepatic. aur. fl. cærul. it. pratenſe fl. minuto albo, it. rotundifol. flor. purpur. Seven kinds of trefoils.

Tuba rubra Turcica. Turkiſh trumpet-flower.

Tubera var. gen. Trufles, ſeveral kinds.

Tulipa

Tulipa var. col. Various tulips.

Tunica. Pinks.

Tuſſilago, ſ. ungula equina fl. luteo. Coltsfoot: Dr Lockſtor thinks its effects are like thoſe of tobacco, and that it might be a good ſuccedaneum to it; but beſides the common Coltsfoot, here grows alſo another different from the other in the ſhape of the leaves, being tapering and very narrow towards the ſtem. Mr. Morten Ruus informed me, that the latter were particularly beneficial for recent wounds, the peaſants, when eſpecially in harveſt-time they happen to cut themſelves with a ſcythe, apply nothing but this herb to the wound, which it cloſes as it were inſtantaneouſly.

Valeriana græca maj. et minor. Greek Valerian, the greater and leſſer.

Verbaſcum mas et fœmina, candid. et nigrum, Mullein, white and black.

Veronica maj. min, et minima, ſaxatilis. Speedwell; it is alſo called Norway-tea, and grows every where in great plenty.

Viola matronalis, alba et aurea, it. ſylveſtris fl. luteo. Dames violets, the garden and wild.

Umbilicus veneris caule ſanguin. fol. linguar. Red ſtalk'd Navel-wort.

Unifolium. One-blade.

Urtica maj. et min. mortua fl. albo. Nettles, and dead nettles.

In the before-mentioned Herbarium vivum, there are above twenty more very ſightly flowers and herbs, which the collector Mr. Lang, was at a loſs under what kind of known exotics to place, and much leſs has he preſumed to give them any name. I ſhall mention ſome others preſently, which I have had ſeveral opportunities of knowing, previouſly obſerving, that the foregoing liſt, is a manifeſt evidence, how the infinitely wiſe Creator has abundantly furniſhed this land with ſuch plants and herbs, as the diſeaſes of the inhabitants moſt require. The diſtempers, eſpecially towards the ſea-coaſt, being ſcorbutic, there accordingly, as has been obſerved, grows not only angelica, roſe-wort, and gentian, preferable to any in Europe, but likewiſe ſeveral other kinds of excellent creſſes, trefoils, ſorrels, and ſcurvy-graſs. Among the latter, Mr. Chriſtopher Steinkul, ranks Erich's graſs, a thick leaved herb

The herbs of this country adapted to its diſeaſes.

herb, of which I had never heard before, which is to be found in great plenty on the iſlands of Northland, and of which the inhabitants of the continent are ſaid to fetch away boat-loads, preſerving it in tuns for winter proviſion, as a ſuccedaneum to cabbage.

## SECT. II.

I now, purſuant to my promiſe, proceed to give an account of ſome vegetables growing in Norway, which are little, if at all known out of this country, but are chiefly noxious. In the pariſh of Vaage in Guldbrandſdale, particularly in the chapelry of Sel, and poſſibly in more places *, though unknown to me, grows a very ſingular and poiſonous root, ſometimes longiſh and knotty, ſometimes rounder, and generally of the thickneſs of a half-crown. The leaves are a ſpecies of graſs, reſembling ſedge, the name of it is Selſnape, whether, as ſome think it be the water-parſley of the Germans, or whether Mr. Ramus more juſtly ſtiles it Aſtrantia ſylveſtris aquatica, Maſterwort, I ſhall not determine, eſpecially as the worthy author himſelf ſpeaks with diffidence, ſaying; Aſtrantia forte eadem, quæ aliis Selſnape, et forte ad cicutæ genus referenda †. Such is the force of its poiſon, that if a beaſt happens to eat any of it, which they are very apt to do, he dies immediately, his belly burſting; and the very fowls who prey upon the carcaſe, ſoon after drop down dead, as is particularly related in a letter of colonel Reiſhwein to doctor Simon Paulli, which is to be met with in the Acta Medica Phil. Hafnienſ. Th. Bartholin. ‡ A learned friend of mine has communicated to me a copy of a letter which he lately received from a clergyman, where, in compliance with his deſire, he gives him

Vol. II. p. 129.

* Mr. Ramus thinks that Oere-land is the chief place where they grow; but this proceeds from his miſtaking them from Gramen offifragum, which will be ſhewn to be a very different thing.

† In a letter of my learned anceſtor Er. Pontoppidon, to Simon Paulli, idib. April. 1675, I find this herb to be alſo called Sprengrod; his words are theſe: "Exſiccatum mitto tibi herbam illam, quæ Sels Nœpe et Sprengeroed appellatur." This laſt name unqueſtionably alludes to its poiſonous quality.

‡ Vol. II. p. 128. Similis eſt Apionis, ſed radices habet craſſas et nodoſas inſtar radicum ſeu raparum Botfeldianarum. Si beſtia, ut equus, vacca, bos, ovis vel porcus illam devoret (cujus tamen appetunt eſcam, unde ruſtici, ubi hæc herba creſcit, iſta loca circumſepiunt, in quibus copioſe luxuriat) ſtatim moritur et diſrumpitur. Venenum ejus quoque tam vehemens, ut avis, ſi cadaveri involet, pariter concidat confeſtim, et ſi inde repellatur, ſtatim ex ære decidat moriaturque. Hanc plantam hujus regionis incolæ appellant, Syllenabbet.

p:126.

N:1. part 1.

Branch of the Oxel Tree p:146.

Stur-gras p:128

Torboe p:131.

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him a more accurate tho' not compleat account, of its good and bad effects in the following words: " This plant derives its name from the place of its growth, which is here in Guldbrandſdale, in the pariſh of Waag, and the chapelry of Sels. It delights in ſwampy places, and begins to ſhoot towards the cloſe of June, or the beginning of July, when the ſwamps are entirely divided. It bears a kind of graſs like the Norway Maſterwort, and its root is about the circumference of a half-crown, ſome round, others oblong, as in the figure. None of the ſeveral medicinal dictionaries, which I have ſearched, mention either its uſe, or ſo much as its name, poſſibly from its being unknown to the authors; tho' a certain writer of Magdeburg ſpeaks of the Apium raninum, which he interprets water-parſley, in the following manner; Affectat ovicula ex paludibus apium raninum, cum tamen inter ovem et hanc herbam talis ἀντιπαθεία ſit, ut ovicula ſtatim moriatur, et in ſignum mortis ex Apio comeſtæ, in hepate ovis reperiatur veſtigium inſtar folii de Apio jecori animalis quaſi impreſſum. Which deſcription evinces water-parſley and Selſnape to be the ſame; the latter being preſent death to the ſheep; whereas in ſwine it is known to operate ſo beneficially, that it is the beſt medicine which can be given them. The poiſon of it is equally fatal to men, as the inhabitants of Sels know from many melancholy inſtances, and within my time, two children, having ignorantly eat of it, died ſoon after. Upon cutting a freſh root into ſlices, and throwing it into freſh water, it emits rays of different colours, and this water being put up with the Nape in a bunged caſk, contracts a ſmell more loathſom than any carrion. As to the virtues thereof, it is found to be a ſpecific in arthritic caſes, for which it is uſed in the following manner; being ſewed up in a piece of fine linen, it is faſtened to the ſhirt ſo as to be placed on the part affected, either the arms, the loins, or other limbs; upon its being warmed by the natural heat of the body, the pain is immediately aſſuaged, and without any return, whilſt the Nape remains applied to the body. This is known by taking it off, when the pain immediately returns, eſpecially if the diſtemper be chronical, or if recent, the uſe of this remedy has been known totally to remove the diſtemper within a quarter of a year. Another ſingular virtue has alſo been found in it; an

inhabitant of the above-mentioned hamlet of Sel, had for ſeveral years been afflicted with an inward weakneſs, but whether it proceeded from the ſtomach or the breaſt was doubtful; the man however was in great miſery, and at length confined to his bed; in his impatience he determined, without conſulting any one, to eat a bit of Selſnape, and ſoon found himſelf relieved; upon the return of the fit he applied it with the ſame remedy, which effectually expelled it, and at length he was reſtored to a confirmed ſtate of health, lived ſeveral years after, and this many credible witneſſes can teſtify. However, I will not recommend this as a medicine, frequent experience having diſcovered the fatal operation of it, as a poiſon on the human conſtitution. This is the ſubſtance of what I know concerning the good and bad properties of the Selſnape."

Gramen Offifragum. Plate IX. b.

Another vegetable, pernicious to the cattle, tho' not ſo fatal, growing in the manor of Sundbord, and in other parts of Norway, is a kind of ſtur-graſs, or large graſs, the leaves broad and pointed, with very little yellow flowers, its name among botaniſts is Gramen Offifragum Norvegium. It has a very remarkable effect on oxen and cows, if they happen to eat of it; their ſtrength totally decays as if their bones were fractured, or rather mollified, that without the ſtrange remedy of adminiſtring to them the bones of other cows, which they devour with the utmoſt greedineſs, they quickly die. The before-mentioned letter of that eminent botaniſt Mr. Reichwein, to Dr. Simon Paulli, contains a deſcription both of it, as well as of the Selſnape: Among other things he ſays, " Confringit et conterit ſtatim omnia oſſa, ita ut fracta inter pellem circa bacillum, circumvolvi poſſint. Non ſtatim tamen exſpirant, ſed curari poſſunt, ſi illis exhibeamus oſſa contuſa alterius alicujus beſtiæ ex eſu hujus herbæ mortuæ." This laſt circumſtance, that the bones uſed for the cure muſt be of ſuch cattle as have died by eating this graſs, is contradicted in another letter of Mr. J. Fred. Marſchalch, in the above-mentioned work, wherein is this paſſage: " Non enim audivi exhiberi illis oſſa animalium eodem gramine occumbentium ſicut Reichwinus beatus ſcribit." A gentleman of this country, who from his own obſervation is acquainted with this ſtur-graſs, and ſent me the original from which the annexed figure was

taken, informs me further of this remarkable particular, that a cow with calf received no damage by eating this graſs, tho' ſuch a violent corroſive in the bones of other cows; but whether, according to the above-mentioned expreſſion of Mr. Reichwein, they become ſo mollified that they might be twined round a ſtick, which (upon the death of ſuch a beaſt would be no difficult matter to try) he could not venture to aſſure me. And Dr. John Treubler, formerly city-phyſician, in his letter to Dr. Simon Paulli *, doubts of it; and as this greatly confirms and throws a light upon this point, I ſhall not heſitate to tranſcribe his words from the before-mentioned valuable collection: "Mitto unà cau- P. 133. ſeq.
lem graminis deſiderati in fruſta diſſectum, ut anguſtia epiſtolæ caperetur, quod ruſtici noſtri (quorum hac de re non paucos examinavi) Strotegraſs, dicunt, flores flavos jam amiſit, plenos ſæminibus, adhuc tamen immaturis, locis paludoſis et humidis creſcit inter alia dumeta; prope omnes villas colonorum primum gramen eſt, quod vere prodit, unde avida ſunt pecora ad decerpendum, quam primum vero alia gramina copioſius prodierint, hoc gramen averſantur, forſan propter caulem duriuſculum. Ex eſu hujus pecora male habent, macie confecta, ſpina dorſi extra protuberante (unde ruſtici dicunt, quod dorſum ſit fractum) pedibus oſſibuſque debilibus, ut ægerrime incedere queant. Quod autem prorſus mollia fiant oſſa, vix fieri poteſt, alioquin omnia animalia perirent et humi proſternerentur: Pro antidoto ruſtici ſemper habent exſiccata oſſa in promptu, quæ quotannis conſervant ad hunc uſum, quando carne prius abraſa uſi ſunt, eadem quoque oſſa in plateis et ædibus colligunt, quæ exſiccata confringunt, et mox ab animalibus magno appetitu, in minima dentibus comminuta devorantur, unde quaſi ſalivatio ſubſequitur, multum-

* However ſome naturaliſts, on the other hand, make no manner of doubt of the poſſibility of an emolleſcence of this nature, an inſtance of which is the following paſſage from Biblioth. Raiſonnée de l'An. 1746, Tome xxxvii. p. 262. "M. Petit a eu bien des combats à ſoutenir au ſujet de l'amolliſſement des os, que cet habile homme avoit un peu trop crû avoir decouvert le premier. Plus de vingt Auteurs avoient décrit avant lui cette cruelle maladie, qui détruit en peu de temps ce que la nutrition, et l'acroiſſement ont fait en bien des années, et qui remet les os dans le degré de moleſſe qu'ils avoient eu dans le fetus. Monſ. Bevan en a donné un nouvel exemple. Une femme fut attaquée d'une diabete, qui apparemment avoit extrememment derangé les ſucs nouriciers; dixhuit mois apres ſes os s'amollirent, ſe prêterent à l'action de muſcles, et ſe plierent à tous les mouvemens, que la ſuperiorité alternative des muſcles extenſeurs et flechiſſeurs peut produire.

que

que aquæ ex ore profluit, ut ſtatim melius habeant pecora et prorſus convaleſcant. Alii pro remedio in pharmacopoliis emunt radicem tormentillæ; plerique tamen et pene omnes oſſibus acquieſcunt. Videtur (quia ruſtici rationem nullam dare ſciunt) quod pecora plerumque primo vere, terra adhuc humoribus nimiis fœta, ex hoc gramine præcoci tantam in ſe humiditatem ſuperfluam ſorbeant et devorent, que deinde per oſſa exſiccari debet. Unicuique tamen ſuum relinque judicium." That according to this learned gentleman's opinion, the bones of the cows are mollified by nothing but the extreme moiſture of this graſs, is what I muſt join with Simon Paulli in doubting; yet, I cannot poſitively aſſent to the opinion of the latter, that the ſoil where this plant grows muſt contain either quickſilver or lead ore, and that it is the mercurial ſpirit inſinuated into this plant, which thus corrodes and diſſolves the bones. But others may form a better judgment of the matter than I can.

Among this claſs of noxions roots in Norway, muſt be ranked Iglegraſs; the peaſants in many places are very apprehenſive of the miſchiefs of this plant, eſpecially in the government of Nordfiord, where they ſpare no pains to clear their meadows of it, as it operates on the ſheep and goats by a violent ſpaſmus or contraction, of which they die in extreme torture. Its root is large, ſhooting up a kind of buſh of thick ſtems, or twigs; the leaves narrow, oblong, and indented, with blue flowers at the end of the ſtems, which about harveſt produce a hollow bud of twice the bigneſs of a pea, containing the ſeed, and ſometimes it is found full of worms and other inſects. It grows chiefly in a cold, watery ſoil. I have compared it with ſeveral figures, and find that it has ſome affinity with the Anemone; likewiſe, according to Lonicer's deſcription of it, with the Sideritis or ironwort, except that inſtead of white or yellowiſh flowers, it has blue. The eating of this plant in ſheep and goats, and ſometimes, tho' ſeldom, in cows, is followed by the Virdſygee, a kind of vertigo, the ſymptom of which is ſuch a contraction of the nerves, towards one ſide, that the neck and head are violently diſtorted towards its hind-parts, under which diſtortion the beaſt continues turning round till it falls, and ſoon after dies. Sometimes, though not often, a ſheep is ſaved by opening a vein in the neck, whereby

the head is reſtored to its natural poſition. The relief for a ram or a cow is to perforate its horns, from whence a purulent matter iſſues.

Another kind of noxious plant is known under the name of Tourgraſs, which is probably derived from its effect, the word ſignifying the magic, or bewitching graſs; it conſiſts of long thin ſtalks, extending themſelves upon the ground, with little roundiſh leaves about the bigneſs of a Daniſh-ſhilling, in other reſpects like mouſe-ear. This plant affects horſes and cows with an unuſual torpor, or a kind of lethargy, ſo that the moſt mettleſom horſe immediately hangs his head, and becomes ſo dull and tractable, as to be managed at will. It is a known practice among jockeys, when riding together to a fair, to watch an opportunity of conveying ſome Tourgraſs into the mouth of another's horſe, if he chances to be ſo much preferable as to prejudice the ſale of the latter. The reſource of the peaſants againſt this diſtemper, and others incident to horſes and cattle, is either caſtoreum, or a piece of an adder, put into dough, and thruſt down the throat of the beaſt. If it be not the adder's head, but ſome other part, then the adder muſt be killed before midſummer, and be ſet apart for this uſe.

In ſome places, particularly in Hardanger, the mountains produce a plant not unlike rue, but with fewer leaves, called Torboe, likewiſe Heſte-ſpring (the horſe-plant) from its particular fatality to horſes, and it is only in extreme hunger that they will touch it. Upon the firſt ſymptoms of having eat any of it, a ſtrong purge of yeaſt, or any other cathartic, generally relieves them, or likewiſe violent exerciſe, to breath them; without this relief, they are immediately ſeized with a prodigious ſwelling in their belly, and a kind of lethargy. This herb, which is flatulent in the higheſt degree, is no wiſe detrimental to cows, ſheep, or other ruminative cattle, as in chewing their fodder they draw in the air. There is in Vaas a plant called Turte, and from the little difference of the name, and the ſimilar torpid effects, for which the poor creatures are often miſuſed by the inconſiderate peaſants, I was inclined to think it the ſame as the former; but being very well acquainted with the Torboe, having an exact draught of it, I find no manner of reſemblance betwixt it and the Turte, which

Plate IX. fig. c.

has much of the appearance of Angelica. The Bears are ſaid to be extremely fond of it, and when by exceſſes in eating of it, they contract an oppilation, they ſeek for relief from the fleſh of animals. Mariahaand and Fandenſhaand, i. e. Devils-hand, are two roots ſomewhat reſembling a hand with five fingers, but diſtinguiſhed by their colour; the laſt is black and uſeleſs, and the firſt white, and good for ſore heads, and other eruptions in children.

I ſhall cloſe this ſubject of the plants in Norway, and their ſimilarity with the plants, in other mountainous countries, with the following paſſage from the celebrated Linneus, "thoſe mountains which reach the upper region of the air, and the ſurface whereof are continually covered with ſnow, produce their peculiar plants, of which the Alps in Switzerland, in Wales, the Pirenees, the Olympus, Baldus, and Arrarat, are inſtances, the like not growing in lower ſituations; as may be ſeen in Flor. Lappon. The plants are no where ſo expoſed to ſtrong concuſſions of the wind, as on the mountains, by which the growth and maturity of them is conſiderably accelerated. This is an expedient of nature to ſupply the ſhortneſs of the ſummer. Tournefort, in his hazardous aſcent to the top of mount Arrarat, at the foot of it, met with the ſame vegetables, which he had found all over Armenia; a little higher he found ſeveral which had not occurred to him ſince his departure from France; in his further progreſs, he found conyſa cærulea, acris, cotoneaſter folio rotundo, hieracium fruticoſum anguſtifolium majus, jacobea ſenecionis folio rag. euphraſia vulgaris, and others which are common in Sweden; but on the ſummit, he found the very ſame plants which are produced on the mountains of Switzerland, and Lapland." The plants which are deſcribed by Cæſalpin, Tournefort, Columna, and Pontedera, as growing on the leſſer hills of Italy, abound in every meadow with us, all which proceeds from the air, and the altitude of the ſoil.

## SECT. III.

Wholſom and palateable berries.

A great variety of wholſom and well-taſted berries are to be found in Norway; firſt, here are, as in Denmark, and other places, cherries of ſeveral kinds, of which, particularly the peaſants in Sognefiord, and Hardanger, ſell great quantities dried. Hagebar, probably a kind of ſloes, an infuſion of which in wine, like cherries,

cherries, makes pleaſant and cooling liquor. Ribs, i. e. currants, red and white, which are here called vinbar, i. e. wine-berries; ſoelbar, ſun-berries; hindbar, raſpberries; likewiſe red and white ſtickkleſbar, Gooſberries; brambar, blackberries; biornebar, barberries; hyben, a kind of berries, which alſo are here called clunger; blaabar, bilburnes; and a large ſort of them called blaakbar, or krakebær, cranberries, and eſpecially the wholſom and delicious jordbær, ſtrawberries; of which there is great plenty, beſides many other kinds of ſuch berries as are hardly to be met with in any other country than Sweden and Norway: The firſt of theſe is oexel or aſaldbær, of which a farther account ſhall be given in the article of trees; tegebar or teyebar, by Lockſtor called uvænorweg, growing on long ſtalks which run along the ground, and hanging at the end of them in bunches like grapes; the leaves are like thoſe of the cherry-tree, the bloſſom white, ſmall and conical, the berries in appearance like currants, but far ſurpaſſing them in taſte *.

Tranebær, myrtillus repens, likewiſe grow on long ſmall ſtems, ſpreading themſelves along the ground; the berries are red and ſour, and, like the ſloe, do not ripen till winter, or rather the ſpring, when on removing the ſnow, I have gathered them on the mountain Filefield in their perfection, yet did not find in them that high flavor which the rein-deer ſeem to enjoy in eating them, and perhaps it is for their refreſhment that the God of nature may have particularly intended them.

Crakebær grows upon a ſpinous ſtem of a middling height, not unlike the juniper-berries; the fruit has ſome affinity with the

* In Chineſe Tartary grows a root called ginſeng, which from the deſcription and figure of it in father du Halde, Deſcript. de la Chine, T. II. p. 182. ſeems perfectly to correſpond with the Norway teyobær, though it is not the berries but the root, which the Chineſe eſteem ſo rare and valuable, that it is ſold by weight againſt ſilver; it is univerſally uſed by the phyſicians of that country, as a medicine for the great men who alone are able to pay for it, and one of the emperors ſent a body of ten thouſand Tartars into the woods only to gather ginſeng. L'Empereur avoit donné ordre à dix mille Tartares, d'aller ramaſſer tout ce qu'ils pourroient du ginſeng, à condition que chacun d'eux en donneroit à ſa majeſté deux onces du meilleur, et que le reſte ſeroit payé au poids d'argent fin.

The virtues of this root are in the higheſt degree of eſteem, a decoction of it being a moſt powerful reſtorative, invigorating the faculties, diſſipating humours, imparting a regular motion to the blood, ſtrengthening the lungs, preventing nauſeas, ſtrengthening the œſaphagus, recovering the appetite, diſſipating fumes and preventing vertigo's: Now whether ſo many valuable properties can center in the tegebar, I leave to the inveſtigations and experiments of the faculty.

bilberries,

bilberries, but the juice thereof is white and ſweetiſh: The Finlanders in Nordland are very fond of theſe berries, and uſe them as a powerful antiſcorbutic.

Aaker or agerbær, land-berries, derive their name from growing under the graſs in the ridges betwixt the furrows, but they are only found in the northern provinces, being of ſuch a nature, like the tranebæ, as to require a ſharp cold to ripen them inſtead of heat. In colour and figure they are not unlike bilberries, only ſomething blacker and larger, the taſte of them is a pleaſant acid. In Sweden, particularly the province of Middelpad, abounds in them, and great quantities are carried to Stockholm, where they are chiefly uſed to put in wine, like cherries, for a pleaſant and cooling ſummer-draught. Linnæus, in the above cited paſſage, recommends, that in tranſplanting them, during winter they ſhould be covered with ſnow to cheriſh them, as without this fence they infallibly periſh.

Plate X. fig. c. Tyltebær a very wholſom and pleaſant red berry, growing on the moſs in high ſituations. The ſtem is ſhort, the leaves ſmall like thoſe of box, the flowers of a lively red. Theſe berries grow ſo thick that they are plucked off by handfuls, they are in ſuch vogue in Denmark, as to be ſent thither preſerved for the table, and though their ſweetneſs and acidity be mixed with a bitter, yet this is very pleaſant, and greatly promotive of digeſtion, which has recommended it to be uſed at tables. Their juice is thick, but when mixed with wine is exceeding palatable and wholſom.

Meelbær. Among the tylteberries grows another tribe called meelbær, all the difference betwixt theſe is, that the ſtem of the meelbær is a little thicker, and the berries a little flatter, but of no manner of value, and full of little white grains like ſand.

Chamœmorus Norvegica. Plate X. fig. c. Moltebar, Chamœmonus Norvegica, the Norway-ſtrawberry, grows in ſwampy or moſſy places, on ſtems ſomething larger than the common ſtrawberry, the flower whiteiſh, with a round indented leaf, about the circumference of a half-crown, if it happens to thunder whilſt they are in bloom, the produce of the berries is greatly diminiſhed thereby, otherwiſe, ſuch is the abundance of them, that they are carried as a pickle by barrels, and even tuns, to Germany, and Denmark; where, according to Thom. Bartholin, in Med. Danor. domeſt. by order of Chriſtian IV. great pains were taken to propagate this fruit in his gardens,

N:o 2.

Tegeber p: 133. Tiltebaer p: 134. Maltebar

but hitherto to no purpoſe, though I have been informed that in Jutland, in the province of Vendſyſſel, they grow ſpontaneouſly, but neither ſo good nor in ſuch plenty as in Norway; in ſhape they ſomething reſemble the mulberry, though not quite ſo long, of a flame-colour, their original taſte is much ſweeter, than after exportation, or when kept throughout the winter, tho' the acidity ſtill retains its agreeableneſs; and is withal ſo ſalubrious, that our phyſicians are unanimous in commending it as an incomparable antiſcorbutic. Thus are theſe, and other berries, together with the before-mentioned ſcurvy-graſs, angelica, trefoil, &c. an ample proviſion, which, according to the paternal views of the Creator, nature has pointed out to the Norvegians for relief in their ſcorbutic diſorders. Thom. Bartholin ſays, "Confectio et ſpiritus morum Norvegicarum omnium vota ſuperat. Mori hujus ea in profligando ſcorbuto deprædicatur virtus, ut eo affectu laborantes, Norvegi amandentur ad virgulta, ubi uberrima hujus fructus eſt meſſis, ut illis ſolis baccis veſcantur, teſtaturque experientia, ſanos ad ſuos poſt illum reverſos." I omit the deſcription given of the moltebær by Simon Paulli, in his Flora Danica, page 139. becauſe Lochſtor, in his already-cited diſſertation, charged it with inaccuracy, and promiſed one more correct, but was prevented by his untimely death; unqueſtionably ſomething more authentic concerning the Norvegian plants might have been expected from him, than the little which is hitherto * known, tho' the knowlege of it be very far fetched. However, what I have ſet down is ſo far intitled to credit as having experience for its baſis, though I muſt withal obſerve, that in the figure of the moltebær, the flowers are made a little too big in proportion to their leaves; in the other figures of the Norway vegetables, I cannot diſcern any conſiderable overſight, and the greateſt care has been taken for their exact reſemblance to the originals.

In Medic. Danor. Domeſt. p. 160.

De Med. Norv. ſuffi. c. 2. p. 15.

Several kinds of plumbs attain to a tolerable ripeneſs, which can very ſeldom be ſaid of peaches and apricocks, it being mere matter of curioſity to plant and eſtimate their trees, as is in moſt places here the caſe with vines.

* In T. 1. p. 56. No. 66. Of Olai Wormii epiſt. is a letter to Nic. Paſchaſius, biſhop of Bergen, which gives us to underſtand that the famous Otto Sperling in his younger years, travelled over this his native country for making a collection of Norway plants and vegetables, the loſs of which is greatly to be lamented.

Apples and pears of ſeveral kinds are found all over the country, and the peaſants now begin to apply themſelves to the cultivation of them both, with more ſkill and more diligence; but the greateſt part of theſe are ſummer-fruit, which ripen early, the winter-fruit ſeldom comes to perfection, unleſs the ſummer proves hotter, and the winter ſets in later than uſual. In this dioceſe, Sognefiord, Nordfiord, and Hardanger, are the beſt parts for the growth of fruit-trees, many of the peaſants there being able to clear their yearly aſſeſſments from their apples and cherries. Of the forreſt-apples, likewiſe, a cyder is made, but not to any great amount.

## SECT. IV.

Of the woods of Norway in general.

But tho' in the article of fruit-trees, Norway muſt be acknowledged inferor to moſt countries in Europe, yet this deficiency is moſt liberally compenſated in the bleſſings of our inexhauſtible foreſts, a bleſſing of ſuch importance, that in moſt provinces immenſe ſums are received from foreigners for maſts, beams, planks, boards, and the like, not to mention the home conſumption, for houſes built entirely of wood, beam upon beam, ſhips, bridges, piles, moles, &c. likewiſe for the infinite number of founderies, which require ſuch an immenſe quantity of ſmall-coal in the fuſion of metals, beſides the demands for fuel and other domeſtic uſes; to which muſt be added, that in many places the woods are felled only to clear the ground and be burnt, the aſhes ſerving for manure, and ſometimes by negligence, in the drought of ſummer, the fire ſpreading along the moſs, thouſands of trees are weakened at the roots, and afterwards blown down by the firſt high wind. Nor is this all; the peaſants alſo uſe an infinite number of young trees for incloſures and fences for their houſes, gardens, and roads, tho' there be no want of ſtone to anſwer that purpoſe. Theſe, and all other circumſtances conſidered, the want of wood in Norway muſt have been at leaſt as great as the preſent abundance of it in moſt provinces, had not nature indued the ſoil, even in the moſt barren mountains, with a moſt ſingular fecundity in the ſpontaneous production of trees; an evidence of which are the many ſhoots from the ſmalleſt fiſſures of the rocks, which thrive much better than when carefully planted in a good

ſoil. However, here, as in other things, the difference in different provinces is very great. On the weſtern-coaſt, ſome houſe and ſhip-timber are exported to Scotland * and Spain, but this cannot come into account in compariſon with the exports from Drammen, Fredericſhall, Fredericſtadt, Chriſtiania, Skeen, Arendal, Chriſtianſand, Chriſtian's-bay, and Drontheim, where the produce of the woods ſupplies an immenſe trade; the maſts and large beams being floated down the rivers, and the latter divided into boards at the ſaw-mills. Sometimes piles of it are ſeen in the ports like little mountains, that one would imagine it muſt require a very long time to remove them, whereas a ſingle embarkation for England, Holland, France, or Spain, in a few days ſweeps them all away; yet in a few weeks theſe places are again covered with mountains of timber. The ſaw-works are the beſt manufacture in Norway, an infinite number of families get a comfortable maintenance from them, together with the felling and floating of the timber. Before the year 1530, ſaw-mills were not known in Norway, the ſtocks were hewed down, and with the ax ſplit into two planks, whereas now they are ſawed into ſeven or eight, ſo that moſt of the wood was waſted into chips, which is the caſe to this day in ſome places, where ſaw-mills are not yet introduced, particularly at Sundmoer and in the province of Nordland, where great numbers of boats and barks are built of theſe hewn planks; they are indeed much ſtronger, but conſume too many trees, the greateſt part of which is left on the ground to rot. The tenth of all ſawed timber belongs to his majeſty, and makes a conſiderable branch of the revenue, Nic. Cragius in Vita R. Chriſtiani III. informs us, that this duty was eſtabliſhed in the year 1645, and further, that even in thoſe times, the large exportations to the Dutch, were at that time apprehended to be detrimental to the national timber: "Regi compertum magnam vim materiæ undiquaque ex Norvegia in varias partes Europæ exportari, ita ut ſylvæ ad vaſtitatem multam

* The Schot-laſt, as it is called, annually exported out of the dioceſe of Bergen, unleſs brought under timely reſtrictions, is a manifeſt deſtruction of the foreſts, as it conſiſts entirely of young pine-trees, all ſo ſtraight and pliable, that if left to grow to maſts, they would yield an hundred rix-dollars each; whereas now they are ſold for two marks and a half the dozen, and when larger, about twelve ells in height, the dozen uſually goes at five marks, which, excluſive of the wood, of which ſo much pains is taken to clear the country, does not ſo much as pay for the labour.

redi-

redigerentur. Quod malum ne licentia nimia exitiosum regno tandem foret, edicto statim vetitum, materiam quoquam, nisi in Daniam evehi." Upon this, the Dutch made a heavy complaint to the emperor, who at that time was their sovereign, and he accordingly sent remonstrances to the king, but received for answer, that the necessary preservation of the timber required such restraint, especially as the peasants totally neglected tillage and husbandry, for the more easy way of maintaining themselves by felling of timber; Deferente plebe rustica agrorum cultum, præ faciliore opera materiæ cædendæ, jacere possessiones steriles et infrugiferas.

These complaints are heard in many places, for altho' the increase of tillage be at present double to what it was at that time, yet on the other hand, from the increase of the inhabitants, and division of estates among several sons, the northern peasants still chiefly give themselves to timber-labour. This could not possibly long subsist, without that remarkable fecundity in the soil for producing trees in those places, where the young trees are permitted to reach their full growth, by the prudence of the proprietor, or by the situation of the wood, rendering the exportation of it difficult; for it is my opinion, that more wood rots in Norway, than is burnt in a whole year in Denmark. Indeed the vast and thick forests seem to contradict any apprehensions that ever the country can be in any want of common timber; but as to the fir-trees, and oaks, it is to be feared that posterity will be at some loss for them, unless the forest-laws are more strictly executed, particularly with respect to young trees, of which the continual exportation must be attended with very bad consequences. The best wood for timber (for of other wood there is plenty every where) is in the following provinces; Saltan, Helleland, Romsdale, Guldbrandsdale, Osterdale, Soloe, Valders, Hallingdal, Sognfiord, Tellemark, the lordship of Nedene, Buskerud, and in the counties.

## SECT. V.

A catalogue of the Norway trees.

As to the several species of trees, of which the woods in Norway consist, the principal are the fir and the pine-tree. However I shall endeavour to enumerate them all, according to the best

beſt of my knowledge, in the ſame method, in which I have already delivered a catalogue of our vegetables.

Alm or Elme, Ulmus, the elm-tree, is not very common here, but grows to a pretty conſiderable height. The bark is dried, grined, and mixed by the poor among their meal; it is likewiſe boiled and waſhed in meal *.

Aſald, ſee Oxel.

Aſk or Eſk, the aſh grows almoſt univerſally here. Among divers other uſes of this tree, the peaſants diſtil a balſam from it, called Aſke-Smittel, or Aſke-Smalt, which every man knows how to prepare, and ſerves for a domeſtic medicine both in internal and external caſes. Dr. Lochſtor, in his Diſſertat. de Mædic. Norv. ſuff. p. 16. beſtows the following encomium upon it; Euporiſton pro utroque ſcopo Norvegis eſt oleum empyreumaticum, vel potius balſamum, vulgo Aſke-Smalt dictum, è fraxino paratum, quod tam interne datum, quam externe adhibitum mirabili ſe ubique commendat effectu.

Barlind very much reſembles, both in kind and appearance, the foreign yew-tree †, but ſeldom grows ſo large, and is rather of uſe in hedges, than for ſingle pillars or poſts. The trunk, which is of very moderate bulk, is ſtrong, and was formerly made uſe of for ſhooting-bows. The veins of this tree are ſo fine and reddiſh, that the makers of violins in Hardanger, uſe it for that and other muſical inſtruments, and the joiners apply it to the purpoſes of fineering and inlaying. The young ſhoots are ſometimes carried to Denmark, to be planted in the gardens of perſons of diſtinction. There are beautiful hedges of it near Frederiſberg.

Beenved is a tree not very common, of the ſame kind with the Privet. It is made uſe of for fine work, being hard and ſolid, which very well ſuits the cutting inſtrument uſed by the joiners and turners in Norway. It grows on the higheſt mountains. The peaſants make a decoction of this wood, which is eſteemed good for a conſumption.

* This powder of the bark of elms is boiled up with other food to fatten hogs, who thrive ſo much upon it, that the virtues of the bark of elms are even proverbial here.

† This tree is divided into two kinds, the ſummer-yew, whoſe leaves are ſomewhat lighter, and the winter-yew, which is of a darker green. Our Norway Barlind is of the latter kind.

Birk, birch, grows in moſt parts, and in the greateſt plenty. It is of two kinds, the common birch, and a leſſer ſort with ſmall thick leaves. Birch is made uſe of here for various purpoſes *. It is more generally uſed for fuel than any other wood, and is carried to the great towns for that uſe, and ſometimes exported abroad from thence. But the bark is of greater utility, and that in two reſpects. The extreme white bark, which is diſtinguiſhed by the particular name of Never, or rind, and ſometimes grows again upon the ſame tree from which it hath been pealed off, provided this was done carefully, is ſo fat and firm in its parts, that it will eſcape putrefaction for many years, even in the dampeſt places. It is on account of this quality, that every peaſant ſpreads it over the fir planks with which his houſe is covered, and upon this Never he lays green ſword or turf to a conſiderable thickneſs for the ſake of warmth. The inner, or the dark brown bark, is applied, like the bark of oaks, to tanning of ſkins and hides, and even fiſhing-nets and ſails, which it renders more durable. The Scotch likewiſe uſe it for tanning their hides, and pay eight Daniſh-ſhillings for thirty-ſix pound weight of it. Beſides all this, thoſe who like it, draw a wholſom and pleaſant juice from the trunk of this tree, as in the eaſtern countries the ſame is practiſed with palm-trees. They bore a hole in the trunk †, and the juice diſtills into a flaſk hanging under it, without the leaſt damage to the tree, provided the hole is immediately ſtopt by driving in a wooden peg.

Boeg, beech, is rather ſcarce here, except in the counties of Laurvig and Jarlſberg. And it does not appear, that beech grows ſpontaneouſly at a certain diſtance northward, for according to the obſervation of Linnæus, in the tranſactions of the Swediſh academy for the year 1739, vol. 1. p. 22. it doth not grow in

* Valbirk, the maple-tree, which ſprings from the roots of ſome birch-trees, is uſed in ſeveral neat and poliſhed works, being hard, firm, veiny and ſpotted, and was thought beautiful, when heretofore the drinking mugs were made of it.

† Dr. Buchwald, in his ſpecimen Botanicum, p. 51. ſays of this birch-juice, "in ſcorbuto, ictero, podagra, nephritide, calculo, ac cunctis aliis chronicis morbis tartareis, tam præſervativum quam curativum ſingulare eſt remedium." A certain friend aſſures me from his own experience, that from the buds of birch, gathered juſt when they are full of their reſinous and viſcous ſap, and diſtilled with birch water, or for want of this in other good water, may be drawn a milky juice, which when it ſubſides and clarifies, leaves in the bottom and on the ſides of the glaſs, a pretty thick balſam, which being duly ſeparated is in point of conſiſtence, colour, ſmell and taſte, exactly like the precious, tho' frequently counterfeited balſam of Mecca.

Sweden

Sweden beyond Eaſt and Weſt Gothland, conſequently not very far north.

Eeg, oak, the ſtrongeſt and moſt durable of all trees, was heretofore in great abundance in this dioceſe of Bergen, as well as elſewhere, but is of late become ſcarce. The beſt oak-foreſts are in the dioceſe of Chriſtianſand, particularly in the lordſhip of Nedene, from whence great quantities are every year carried to Arendal and Chriſtiandſand, for ſhip-building, and many ſhips are loaded with it every year for Holland, tho' the exportation be prohibited. Norway-oak excels that of all other countries, except the Daniſh, which is preferred to it. A decoction of oak-leaves in beer is uſed by the peaſants in Norway, as a cure for the gout or rheumatiſm, by dipping a cloth in the decoction, and applying it warm to the part affected.

Elle, which is likewiſe called older and oor, the alder-tree, is of two kinds; viz. the roedoor, or red alder, this is the moſt common, and the leaves of it are ſomewhat rough; and Svartoor, black alder, whoſe leaves are ſmooth and ſhining; the latter grows chiefly in marſhes and other ſwampy grounds. The twigs of it are judged wholſom food for the ſheep in ſpring, as it expels the water, which is apt to lie in their bodies, and to cauſe a kind of dropſy. The bark is uſed for a black dye. If it happens to ſnow after this tree has put out its leaves, then the leaves turn brown, dry and wither, together with the trunk, which is occaſioned by a ſpecies of ſmall worms, which are ſaid to be in the ſnow, and affect no other tree. But if it be cut down immediately, the root will ſhoot again.

Enebær-tree, (which is here commonly called ſprake, and in other parts of the country, briſk and bruſe) the juniper-tree, grows in abundance almoſt every where, and by the ſpreading of its branches over the ground, ſerves to cover and cheriſh the young ſhoots of firs and other trees, but at the ſame time kills the graſs. The body of this tree, which ſeldom exceeds ſix or ſeven ells in length *, is uſed for poles and hedge-ſtakes, as alſo for paling, it

* In the church of Trovær, in the province of Nordland, and diſtrict of Senjen, there are, according to common report, two pillars of juniper-tree eighteen ells high from the ground, which, if true, and if the pillars are not compoſed of ſeveral pieces, is very extraordinary. It is more notorious, that the trunk of a juniper-tree is ſometimes thick enough to be ſawed into ſmall boards, which are uſed for cheſts and cupboards, and always give an agreeable ſmell in a room.

being on account of its fatneſs more durable than any other wood. In Nordfiord and elſewhere, a very valuable juniper-oil is extracted from the fruit, and ſometimes exported to Holland. The ſame uſe is made of the berries, but not ſo frequently now as heretofore.

Eſp or bever-eſp, the aſpen-tree, whoſe leaves ſhake and tremble at the leaſt motion. The twigs are, like thoſe of the birch and alder-tree, given to the cattle, particularly horſes, when other fodder is ſcarce. This tree, which in other reſpects is very weak and tender, proves to be almoſt incorruptible, in the water or humid ground, when it is laid down without being ſtripped of its bark, and is therefore much uſed for water-pipes and gutters under ground.

Fyr, or as it is here called fure, the fir-tree, is of two ſorts; the red and hard fir, which grows upon the mountains, and contains the greateſt quantities of reſin; and the whitiſh ſort, which grows quicker in low and moiſt grounds, but is of much leſs value, conſiſting only of the bare timber. The fir-tree in general, which grows almoſt every where in Norway, is the richeſt produce of the country; for this ſingle tree yields annually at leaſt, I ſpeak within compaſs and from the ſtrongeſt aſſurance, above a million of rixdollars, eſpecially if we include the advantages of the ſaw-mills, and the maſts, ſome of which are ſold from one hundred to two hundred rixdollars each *. Theſe trees, excepting thoſe on the mountains, from whence they cannot be ſo eaſily removed, are now ſeldom ſuffered to grow ſo large as in former days, of which we have the ſtrongeſt evidence in modern houſes, for a peaſant's apartment, which heretofore uſed to be raiſed by four ſticks of fir-trees laid upon each other, requires now commonly ſeven or eight. The richneſs of the ſap of the red fir-tree may be concluded, among other arguments, from the age of ſome of our Norway-peaſants houſes, which are ſuppoſed to be three or four hundred years ſtanding, if not more. We even read in Mr. Jon. Ramus's hiſtory of Norway, that in the farm of Næs in

* A choice maſt-tree, which when ſtanding may be eſtimated at ſixty, hundred, or hundred and twenty rixdollars, cannot, after it is cut down, be conveyed to the ſea-ports for leſs than double the prime coſt; for beſides the many other trees it requires to form a kind of bed for it to float upon, leſt it ſhould be torn to pieces by the rocks, ſometimes an hundred trees or upwards muſt be fell'd to make a way for it, and laborers are employed to hawl it in places impaſſable for horſes.

Guldbranſdale, the houſe is ſtill ſubſiſting, in which king Oluf lodged five nights in the year 1022, above ſeven hundred years ago, when he took a circuit round the kingdom to convert the people to the chriſtian religion. From the roots of the fir-trees the peaſants burn tar, even an hundred years after the trunk has been cut down. This tar is a very profitable commodity, and ſo excellent in its kind, that biſhop Berkley, in his treatiſe on the virtues of tar-water, recommends the Norway-tar in preference to any other. An eminent merchant in this place has aſſured me, that the diſpenſaries in London apply to him yearly by letters for forty caſks of tar, the produce of Nordfiord, which is of a more reddiſh colour than any other. In like manner the fir-trees from Norway and Sweden are in much higher eſteem, than trees of the ſame name and appearance in the warmer countries, in Spain, for inſtance, about Tortoſe, in Tuſcany, in Dalmatia, and other countries on the Mediterranean, which may indeed content themſelves with their own for want of better, but could not ſell them in their own ports, if a Norway-man ſhould import a cargo of ours. There have been attempts made to ſow the Norway fir in England and other parts, but the difference of ſoil and climate will not ſuffer the trees to equal thoſe of Norway. In reſpect to the ſoil, it is not the good, rich and black earth, that favours this tree, nor the clay-ſoil, but rather the gravelly, ſandy, or mooriſh lands. The method of ſowing other trees will not ſucceed with this. It chuſes to grow independent, and to ſow itſelf at pleaſure. The beſt method therefore is to hang up here and there, on a pole erected for the purpoſe, ſome of the ripeſt pine apples, by which the ſmall ſubtil ſeed which lies concealed between the knots, may be thrown out by the motion of the wind, and drop wherever that carries it. In the fens, the marrow or reſin of the fir-tree is naturally transformed into an incenſe, which may be called the Norway-frankincenſe, and is found in the fenny grounds. The buds or pine-apples of the fir-tree, boiled in ſtale beer, make an excellent medicine for the ſcurvy, and not ſo unpleaſant to the palate, as the tar-water, tho' in effect of the ſame kind. In Sundmoer, and perhaps in other parts, ſome branches grow upon a certain ſpecies of fir-trees, which appear quite monſtrous and ſtrange in compariſon with the reſt, for they are not

round, but entirely flat, and ſhaped in ſuch manner, as almoſt to reſemble the horns of a Deer.

Gran, the pine-tree, is, together with the fir, the moſt univerſal wood of this country's growth. It is more beautiful than the fir, in figure, height and colour, but far inferior to it in ſap and ſtrength, which occaſions the boards or planks of it to be ſold at a lower rate. The Norway peaſants have ſo little mercy upon their pine foreſts, that they ſeem to think it their duty to deſtroy them, inſiſting upon it, that they cannot poſſibly be extirpated in the vaſt tracts of land, which continually produce a freſh ſupply. In the ſpring, when forage is ſcarce, the peaſant is permitted to cut thouſands of young pines, but in autumn he is not allowed to give his cattle more than the ſmall ſhoots.

Hage-forn, the cornel-tree, and ſloe-forn, the ſloe or bullace-tree, grows indeed in theſe parts, but is not planted in the green hedges, as in other parts, for the Norway peaſant is not dextrous at planting, and thinks it a merit, if he does not deſtroy the free produce of nature.

Haſſel, haſle-trees, are here pretty large, and in ſuch abundance, that it is no uncommon thing for a hundred tun of nuts to be exported from Bergen alone. On the other hand, the walnuts here are not of a ſpontaneous growth, but muſt be ſet, when they thrive very well, eſpecially in the barony of Roſendal.

Hyld, elder, with its ſalubrious berries, is alſo of Norway growth, but is neither here nor in Denmark, eſteemed or made uſe of according to its worth. Sambucus aquatica, in Daniſh called Vand-hyld, water-elder, the flowers whereof look like ſnow-balls, and upon that account in German are called ſnowball ſhrubs, is likewiſe to be met with though not every where.

Ivenholt, or ebentra, ebony, is by J. L. Wolfe, claſſed among the trees which grow in Nordland, under the mountain of Kolen, but being without any additional confirmation of this, I cannot deliver it as a certainty; I muſt obſerve, however, that the following words of Wormius, may have given riſe to this opinion, though he delivers himſelf with ſome doubt; "Ab hoc ebeno foſſili diverſum eſt, quod in iſlandia reperitur, et laminatim eruitur, colore nigerrimo, quandoque ſubfuſco, ponderoſum et fragile, exſiccatum ubi fuerit, quanquam mercator, qui ejus mihi copiam fecit,

lentum adeo et flexile esse, cum primum è terra eruitur, retulerit, ut viminis instar, in quamvis partem trahi possit ac flecti. Fibris constat obliquis ex nodis hinc inde, plane instar radicis majoris cujusdam arboris. In iis locis islandiæ, ubi magna copia eruitur, terra ad duas ulnas effossa, nullæ plane sunt arbores, aut fuisse unquam, animadverti potest. Quo circa nescio, an eorum probari possit opinio, qui existimant, hic olim sylvas fuisse, quæ relictis radicibus, incendio conflagraverint. Radicum vero truncos à succo subterraneo vitriolato colorem nigrum contraxisse verosimilius. Mus. Worm. p. 169.

Lind, lime-trees, great quantities of these are found in certain places, both with large, clear, and small dark leaves. The peasants with the bark make very elegant butter-baskets, or other vessels for the carriage of the butter; likewise lines for husbandry, and also for fishing.

Lon, acer major, the maple also grows here, but little use is made of it.

Piil, willows of several kinds are to be found in many places, but made no account of, except by the goats, who feed with pleasure on its juicey and bitter bark; though of one kind called salina, the bark is used for tanning skins; the broad-leaved kind, the leaves whereof underneath are woolly, goes here by a very long and strange nick-name, Traet somfanden flaaede geden under, i. e. the tree under which the devil flead the goats. What traditional fable gave occasion to this, I know not, but probably it arose from hence, that as the goats delight in stripping these trees, as has been said, some one has conceited, that the devil by way of retaliation, under this tree strips or fleas the goats, in their turn. But whilst I am writing this, I have received from an ingenious hand a more probable conjecture on the causes of this name, that several small threads, or filaments like goats-hair, lie betwixt the wood and the bark. He further informs me, that a decoction of these fibrillæ is of a singular virtue in curing the scurvy. Whether this tree is to be found in other countries I cannot say *.

Rosentrae, the rose-bush, bears here, as well as in other places, red, white and yellow roses, both double and single.

* Some attribute the properties of this tree to the sambucus aquatica before-mentioned, but how justly, I cannot determine, for want of personal experience.

Ronne,

Ronne, the wild Sorbus-ſylveſtris, the wild Service-tree, grows every where, even on the parched ſides of the mountains, nouriſhing with its berries, not only the field-fares or cock-thruſhes, of which we have many, and in great perfection, but even the bear, though the latter, generally, to the ruin of the tree, the weight of his body breaking and damaging the tree in his climbing up. The young twigs are gathered with the berries on, and uſed medically, in winter, againſt the belly-ach.

Tindveed, the name of the tree called the Spina-Chriſti, or Chriſt-thorn, is pretty common, and being an ever-green, is frequently planted near houſes.

Oexel, or Axel ſorbus terminalis, a kind of ſervice. This tree is one of the particular natives of Norway, and little known to foreigners. Mr. Chriſtian Gartner, who viſited ſeveral countries, and had thorough knowledge in his profeſſion, ſays, page 47, of his Horti Cultura, that he firſt met with it in counſellor Shultz's garden in Drontheim, on which account I have annexed a draught of one of its branches with the leaves and flowers; Linneus makes the following mention of it, Oexel, cratœgus, foliis ovalibus inæqualiter ſerratis, Hort. Cliff. 187. Cratœgus ſcandica, foliis oblongis, non nihil lacinatis et ſerratis. Celſ. Upſ. 17. It grows in Oeland and Guland (Gothland) but except in Sweden and Norway, it is hardly to be met with growing ſpontaneouſly*. Some places in the neighbourhood of Bergen produce this tree, but not in great numbers. The ſtock and branches bear ſome reſemblance to the ſervice-tree, but bend more; the bark is of a greyiſh brown, and veined; the leaves of a finger's length, half as broad, and indented, the points towards the extremity being ſmall, but the indenture within the leaf is ſo deep as to make the appearance of other diſtinct leaves on the ſame ſtem. At the extremity of every branch, and betwixt three leaves, hangs a bunch of thirty or forty berries, oblong, red, and, when ripe, diſtinguiſhed with a black ſpeck; their ſtones ſmall; the juice red; and when infuſed in wine very pleaſant. Valerius Cordus, in his Diſpenſary,

See plate IX.

Tranſactions of the Swediſh Acad. of Sciences for the year 1741, Book ii. p. 93.

* In ſome few parts of Germany, eſpecially in the diſtrict of Fouringen, grows a kind of tree, which is there called Arliſbeer-tree, and which by its deſcription, has a great affinity with our Oexel. See Allgem. Œconom. Lexicon. p. 124.

commends theſe berries, as a cooling, and at the ſame time an aſtringent, medicine †.

## SECT. VI.

Among the vegetables of this country, we muſt further claſs what by many is looked upon only as a conflux of effœte ordure, but is in reality, and eſpecially when examined thro' a microſcope, a regular vegetable, furniſhed with root, ſeeds, and leaves; I mean the ſeveral kinds of moſs, with which this country is overrun, not only on the meadow-ground, where it is very detrimental, but alſo on the trees, from which, after a ſhower it is eaſily detached, tho' at other times adhering very cloſely. This moſs, upon a narrow inſpection, is very different in colour, white, grey, brown, yellow, black, and ſpeckled; in figure, being either entangled like wool, or with long filaments; or again with leaves regularly diſpoſed, tho' of different figures, and it is ſometimes full of ſmall round capſulæ, as recepticles of the ſeed *. This mean and deſpiſed vegetable, which ſeems to die under a long continuance of heat and drought, immediately recovers new life from the rain, and is not made in vain by the wiſe Creator, it being the ſupport and fodder of many thouſands of rein-deers, on the barren ſummits of the mountains, thro' all the ſeverity of the winter; they remove the ſnow with their feet to get at this delicious food; and they can neither thrive nor live to any time, if, as has been often tried, they are removed into another country

Moſs on trees and ſtones.

† Thus has the Sovereign of nature liberally dealt out particular vegetables and trees to every country, according to the climate and ſoil thereof, and the neceſſities of its inhabitants.

> Nec vero terræ ferre omnes omnia poſſunt.
> Fluminibus ſalices, craſſiſque paludibus alni
> Naſcuntur. Steriles ſaxoſis montibus orni,
> Littora myrteis lætiſſima. Denique apertos
> Bacchus amat colles. Aquilonem et frigora taxi
> Aſpice et extremis domitum cultoribus orbem,
> Eoaſque Arabum pictoſque gelonos
> Diviſæ arboribus patriæ. VIRGIL. Georg. Lib. II. Ver. 109.

* J. Chr. Buxbaum in Commentar. Acad. Petropol. Tom. III. p. 271. Treats of ſeveral kinds of moſs, and particularly gives the following account of a Norway-moſs: "Genuina muſci ſpecies eſt muſcus Norwegicus, umbraculo ruberrimo inſignitus, muſci Petrop. quem Tournefortius incongrue Lichenibus accenſuit et Lichenem capillaceo folio, elatiorem pelvi ruberrima vocat, deceptus forte a ſcuto, quod hic in ſummo fert pediculo, quum ſciret multos ex Lichenibus eſſe ſcutigeros. Sed hoc ſcutum in hoc immuſco vires gerit calyptræ, ſummo nempe capitulo pyriformi poſitum, et eſt calyptra quaſi expanſa.

where they may have their fill of the beſt graſs. Without plenty of moſs, and ſeeking for it in their natural freedom, they ſenſibly linger away. Beſides this, our peaſants make a decoction from many kinds of moſs, which is diſpoſed of to the dyers; this is here called Borke, and makes a good red and brown dye for vadmel, the coarſeſt ſort of cloth uſually worne by the peaſants. There is moreover a certain kind of yellow moſs hanging on the branches of firs and pines, which is very venomous, yet applied to a neceſſary uſe, for being mixed in pottage, or with fleſh, as a bait for the wolves, they infallibly die of it.

Of fungous vegetables, which are called by the general name of Skuroe-harre, or Champignons, i. e. muſhrooms, ſeveral ſorts are to be found here, as in Denmark and other places, particularly thoſe which are dried and ſold by the name of Markler (the ſame which in England are called muſhrooms.) Theſe grow in the neighbourhood of Buſkerud in Hedemark and other places, and are bought up by the curious to ſend abroad ‡.

## CHAP. VI.

### Of the Sea-Vegetables of Norway.

SECT. I. *Sea-vegetables little known to us.* SECT. II. *Several ſpecies of ſea-graſs.* SECT. III. *Various kinds of ſea-trees.* SECT. IV. *Great and ſmall corals.*

### SECT. I.

Sea-vegetables little known to us.

HITHERTO, I have, to the extent of my knowledge, given an account of the land-vegetables of Norway. As to thoſe of the ſea, it would give me pleaſure if I could gratify the reader's curioſity with ſome new diſcoveries in this latent part of the kingdom of nature. However, the little I have to offer is grounded on my own experience in voyages, and the reports of intelligent ſea-faring perſons. But leſt this ſhould be thought a ſubject of no utility, I ſhall introduce it with the following paſſage from

‡ This kind of fungus is uſually found under birch-trees. They are of a reddiſh colour, with little white ſpecks, penetrating through them, ſome call them Fluefvamp, i. e. fly-ſponge, they being boiled in milk and ſet out to deſtroy flies; this fungus being a ſtrong poiſon.

that ingenious naturaliſt M. Anderſon of Hamburg: "It is to be lamented that the botaniſts, eſpecially the Germans, for want of opportunity, being remote from the ſea, have not, nor can apply themſelves with a preciſion becoming the ſubject, to make a collection of the marine-vegetables about this country, diſtributing them in proper claſſes, with deſcriptions of each. For ſince I have entered upon theſe ſpeculations, and collected as many kinds as I could, they appear to me, matter of freſh wonder and moſt exquiſite delight to a devout naturaliſt, in the conſideration of their inexpreſſible, and to a ſtranger incredible, variety, figure, colour, production, without roots, &c. and when I reflect, that nothing but what is good and uſeful comes from the hand of the wiſe Creator. I will affirm that theſe vegetables, however uſeleſs they may be accounted, not only afford nouriſhment to innumerable living creatures, but might for the moſt part be ſerviceable to mankind, not only as food, eſpecially in time of neceſſity, but likewiſe for powerful medicaments; did not our infatuation for what is foreign and coſtly incline us to under-value them. Mr. Martin, in his deſcription of the Weſtern Iſlands of Scotland, a book well worth reading, has, in page 148, &c. thrown together ſome very valuable obſervations upon them, which he made among the inhabitants of thoſe iſlands, who live in the utmoſt ſimplicity, and in a rational enjoyment of the little, which the author of nature has beſtowed on them; inſtances which ſhould raiſe a bluſh in the effeminate and luxurious." Thus far Mr. Anderſon. As part of the inhabitants of the ſea bear in their figures a reſemblance to thoſe of the land, as is ſeen in the ſea-cow, the ſea-horſe, the ſea-dog, and ſea-hog, &c. ſo fiſhermen, and divers who have opportunity of knowing theſe things inform us, that the eminences and declivities in the ſea, like the mountains and vallies, are over-grown not only with ſea-graſs and plants of ſeveral kinds, but that likewiſe they produce buſhes, trees, and coral-ſhrubs. In the chapter on the waters, I have already quoted the teſtimony of Kircher, grounded on the information of Arabian fiſhermen. The bottom of our northern-ſea, likewiſe affords variety of ſuch marine plants, ſome of which muſt be unknown to the curious in other parts, and for their ſatisfaction I have cauſed exact figures of the moſt remarkable ones to be annexed.

Account of Iceland, Greenland, and Davis's Streights.

Chap. xi. § 1.

But,

But as it is not my concern to aſſign proper appellations to theſe marine vegetables, ſo to diſtribute them into their reſpective claſſes and genera, with that accuracy I could wiſh, is, I confeſs above my capacity. I ſhall only, agreeably to their figures, make two general diviſions of them into herbs and trees; the third claſs being the corals or ſtoney vegetables, which by ſome are confounded with the ſea-trees *. Mr. J. C. Buxbaum, in Commentar. Acad. Petropol. among other obſervations on marine plants, ſpeaks as follows, " Plantæ ſubmarinæ paucæ fuerunt antiquioribus notæ botanicis, quarum numerum valde auxerunt Rajus Plukenetius aliique, qui his obſervationes ſuas communicarunt. Diſtinxit in aliquot has claſſes modo laudatus Rajus, ſed ſi accuratius inſpicias, ipſum invenies confuſum, nullos veros terminos conſtituentem inter fucos et algas et muſcos marinos, quæ illi promiſcue nunc ſub hoc, nunc ſub illo nomine proponuntur, meliorem plantarum ſubmarinarum in genera certa diviſionem debemus Tournefortio, qui tamen in eo reprehendendus, quod ſub fucorum et corallinarum nomine, plantas inter ſe parum convenientes comprehendat.

## SECT. II.

Several kinds of ſea-graſs.

Since my arrival in this country I have made a collection of vegetables growing in the ſea of Norway, and by it I perceive, that what is commonly called tong, ſea-weed, or in Norway, tarre-alga; which is partly found growing on its root †, partly detached by the wind, and by the agitation of the waves is drove aſhore, or among the appertures and corners of the rocks, is ſometimes green, ſometimes of a dark brown, ſometimes narrow and flat, like a blade of graſs, and two or three ells in length, ſometimes ſlender and round, but much longer, I myſelf having pulled up a piece of no leſs than ten ells, conſequently, they exceed many trees in height, and even this might poſſibly be one of the ſhort-

* In ſome parts at the bottom of the red-ſea, the coral-trees gradually increaſe to ſuch a degree, that the veſſels and boats are put to no ſmall difficulty to clear their way through them.

† So by way of an analogy, I call thoſe ſhort ſtems by which all thoſe vegetables are connected to ſome ſtone or other, which generally is drawn out along with the vegetable; for properly the ſea-vegetables have no roots, being on all ſides ſurrounded with their alimentary matter, and thus ſtanding in no need of a root to imbibe their nutriment, ſo that the entire plant may be ſaid to be a root.

eſt;

eſt; ſometimes they are found with a ſhort, roundiſh ſtem, and leaves about two or three fingers broad, with ſmall ſemicircular indentures like the oak leaf, ſometimes they are longer, and at the end reſemble peacocks feathers; ſometimes plain, ſometimes ſcabrous, with hollow tubercles, but, as far as I could find, without any ſeeds in them. A ſea-weed is ſometimes found here, with leaves of ſuch a length and breadth, and withal even and ſmooth, that I do not know of any of our land vegetables to be compared to them; I have taken out leaves four ells and a half long and one in breadth, and ſo perfectly even and ſmooth, that at firſt ſight a ſtranger would have taken them for green ſattin; and among theſe weeds, the lobſter finds both food and ſhelter. Whether this tarre bloſſoms like other vegetables, I cannot affirm from my own knowlege, but a perſon of curioſity has aſſured me, that he has ſeen the flowers ſwimming on the ſurface of the water, and that they reſemble white lilies; and promiſed at the ſame time to procure me ſome. I here mean only the genera, not doubting, but upon further ſearch, ſeveral particular ſpecies of them may be found on the coaſt of Norway, and other coaſts, eſpecially in Iceland, where the poverty of the inhabitants has taught them to turn the ſea-weeds to various uſes, every kind according to its nature, even to the grinding it to a kind of meal for gruel or pottage, which at the ſame time proves a gentle cathartic *. The peaſants on the ſea-coaſt in theſe parts, who underſtand their buſineſs, make uſe of ſea-weeds for manure in the improvement of their ground, and in the province of Nordland, where in ſummer-time the cattle find plenty of paſture on the mountains and among the meadows, but where on that account they are the more pinched in their winter fodder; it is a common practice to ſupply this ſcarcity with dried tang, and likewiſe with the heads of cods and other large fiſh bones; they alſo make what they call a caw-ſoup, of which the beſt ingredient is tang or ſea-

Its uſe and benefits.

* Concerning the ſpecies of the alga ſaccharifera as it is called, which when dried, looks and taſtes as if ſugar had been ſtrewn over it, and among the Icelanders, in many caſes, is uſed for ſugar. See Thom. Bartholini Acta medica, Hafn. Vol. III. p. 174. Vol. IV. p. 33. Multa ſaxis marinis adhæret algæ copia, quam vere colligunt, aliquo tempore interjecto album acquirit colorem, cujus eſt etiam in commendatione ſapor, cum dulcedine non inferior ſit ſaccharo. Hanc quoque cum butyro comedunt Iſlandi. See alſo p. 159. relat. Borrichii.

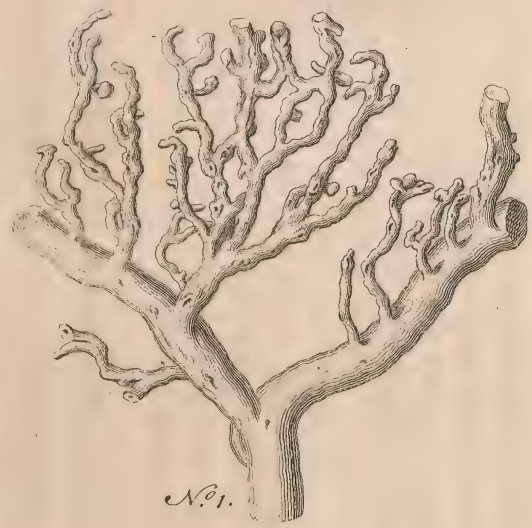
weed. * In England and Scotland, where this vegetable is generally called clep, the poor people on the coaſts turn it to a good account, burning great quantities of it to aſhes, for which they are ſure to meet with a market at the glaſs-houſes; likewiſe by reaſon of the ſaline particles contained in theſe weeds, they are boiled for pot aſhes, and the ſediment is known to be a good manure.

## SECT. III.

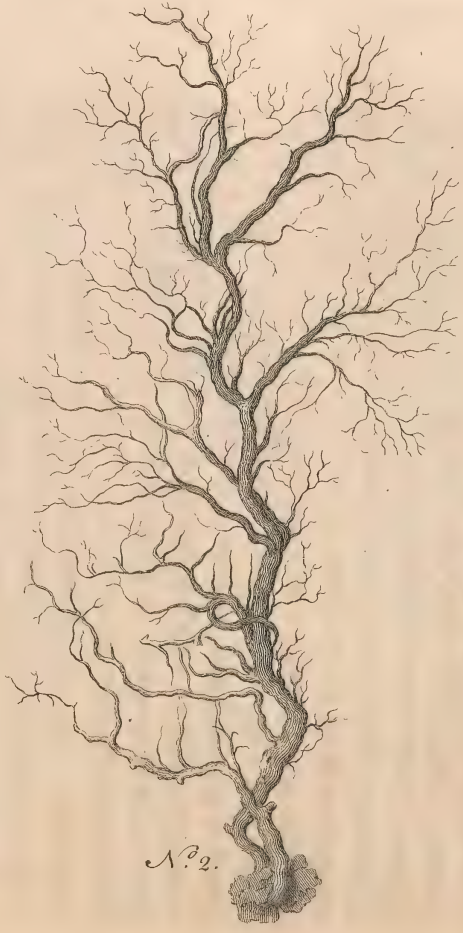
Sea-trees. Beſides theſe ſmaller marine products, plants or weeds, the ocean here produces various ſpecies of large vegetables, which are known by the name of ſea-trees, and though of ſuch as grow in a bottom, a hundred or two hundred fathom deep, none except young ſhoots can be drawn up entire, yet the nets, or lines of the fiſhermen entangling in the tops of ſuch trees, ſome of the leſſer branches are torn away and pulled up to the ſurface; and theſe branches are ſuch as may be concluded to come from large trees, I having one ſeven inches diameter, though indeed it is the only one of that dimenſion, the others being but two inches and a half or under, like the ſlendereſt ſhoots of cand-trees. If I were better acquainted with the latter, it would enable me to undertake a compariſon betwixt the congenial products of the earth and water, and thus afford higher entertainment to thoſe of my readers, who have a taſte for botany. But as Burgermaſter Anderſon, in the paſſage above cited, corrects the great deficiency herein, I ſhall add a ſhort deſcription of thoſe in my collection, which were all drawn up from the bottom of the ſea along the coaſt of Norway.

Uſe of them. I muſt previouſly obſerve, concerning the uſe and benefit of ſea-trees, that the peaſants hold them indiſcriminately to be very ſerviceable againſt a diarrhœa, in which, however, they may be as greatly deceived, as they too often are in their ſuperſtitious practice of hanging up a branch of a ſea-tree in their houſes, as a kind of talliſman or preſervative againſt fire, inferring, in their way of

* Some alſo accuſtom their ſwine to eat the ſea-weed, and for them it is likewiſe boiled, being otherwiſe too hard of digeſtion; more particulars on the uſe of it are to be met with in the Swediſh tranſactions, worth the knowlege of the induſtrious farmer, who lives near the ſea, and is for making the moſt of every thing.



N.o 1.



N.o 2.

N.o 3.

reaſoning, that theſe being natives of another element will repell fire *.

I. This is the above-mentioned largeſt branch, ſeven inches diameter, but only on one ſide, the other being ſomewhat ſmaller, ſo as to form a flat cube. The leſſer twigs of an ell high, which ſtand parallel to each other, and form a pretty intexture, are of the ſame figure. The bark or thin rind which may be peeled off is of a carnation colour. The wood is of a clear white and very porous, with orifices large enough to admit a larding-pin without hurting the wood. In what manner the branch terminated, is unknown to me, it being broke towards the end, and without this accident, proportionate expanſion muſt have render'd it not only too big for my muſæum, but poſſibly for my houſe. Plate XI. And from hence the number according to order.

II. This piece is two ells in length, and entire, as are all the following. The wood is compact as if without bark or rind, the ſpread of the twigs like that of a currant buſh, here and there a little more incurvated, perfectly ſmooth, of a clear yellow, and towards the tips or ends, as ſlender as a briſtle, with ſmall moſſy filaments hanging here and there among the twigs.

III. This is three ells and a half long, with thin and ſoft twigs, reſembles the artemiſia, only expands itſelf more on the ſides, which is uſual in marine trees: In the thickeſt part of this branch the wood is pretty firm, with inviſible pores, but the twigs to their very extremities are ſtudded all over with little boſſes, of the bigneſs of half a pea, and theſe again ſpotted with dark boſſes; the general colour is a darkiſh brown. In one of the cavities of this branch, I found a ſmall white capſula, of a chalky ſubſtance, and in it an inſect like a bug, which upon the capſula's being opened, was immediately in motion. This branch pretty much reſembles thoſe mentioned by Wormius, in his Muſæum, p. 234. under the name of Plantæ Marinæ facie reſedæ, likewiſe Cluſius Exot. L. VI. C. 6. In the branches of this kind of marine wood,

* The natural and proper uſe of theſe ſea-trees, and the like marine vegetables, is unqueſtionably for the retreat and nouriſhment of the fiſh; of which, ſome, as on the land, are predatory, living by ſlaughter; whilſt others of more peaceable diſpoſitions, feed among the trees and vegetables, which are particularly known to be an exquiſite dainty to the fiſh called Broſmer. The learned Theodore Haſe, mentions a north-ſea whale, the ſtomach whereof being opened, was found full of tang or ſea-weed, Bibliotheque Germanique, Tom. XV. p. 157. Thus are none of God's works ſuperfluous or unneceſſary, though often diſregarded or not underſtood.

which

which is the moſt common in theſe ſeas, is often found the ſea-ſtar, which ſhall hereafter be deſcribed under the name of Stella Arboreſcens, or, if my fancy may take place, of Caput Meduſæ, and this creature from its delight in this vegetable may be conceived to make it vital food, at leaſt I have met with it in ſeveral branches of this ſpecies.

IV. This is an ell and half in length, a full inch diameter, extremely porous, the twigs ſcabrous and curled towards their extremities; bearing round nuts of the bigneſs of a ſmall nutmeg. This branch is of a ſtraw colour, but I have another of the ſame kind, which, though of nearly the ſame growth and figure, is very different in colour, being of a deep red, which renders it very ſightly.

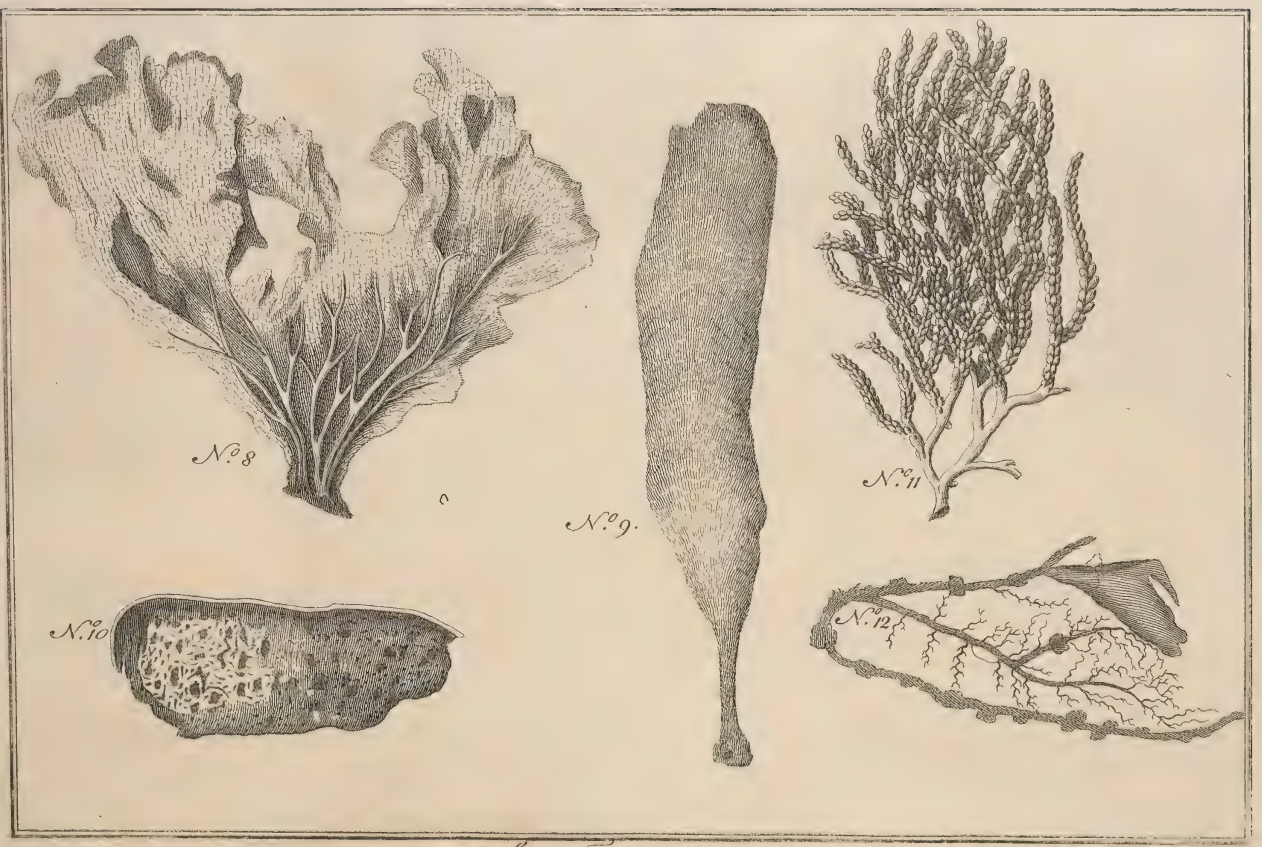
V. This piece is two ells and half long; and the only one I could obtain immediately after its being taken out of the water; and conſequently ſaw it full of ſap, freſh in colour, and in all its vigour. It was then far more beautiful than ſince it was dried, being then of a lively red, or a fiery yellow. The chief limb is as thick as a child's arm, and the twigs as a finger. At each extremity is an oblong excreſcence, like a ſmall pear, but this fruit or leaf, I know not which to call it, is of the ſame ſubſtance as the ſtock itſelf, a circumſtance common to all ſea-trees, none of them bearing thin leaves. Having laid it in the window to dry, it diſtilled a mucilaginous liquor of the ſame colour, but of a ſtrange unpleaſant ſmell. Whilſt this vegetable retained its moiſture, it had ſome reſemblance to human fleſh, with ſome minute interſtices like pores, but upon the ſtems being dried and ſhrivelled, they became larger, ſo that now both in colour and figure it reſembles ginger.

VI. This branch is not ſo ſightly, and ſomething leſs than the former, to which both in colour and ſubſtance it is ſimilar, but not in figure, it being, as the plate ſhews, flatter and coarſer.

VII. This branch again is leſs than the former, but far more ſightly, conſiſting of a buſhy aſſemblage of many ſmall twigs. It is not thicker than a quill, ſpungy within and woolly without, as if covered over with the fineſt cloth. Its colour is a pale yellow: It has a flat root, preſerved better than any of the reſt, by which, this ſpecies is connected with the rock.

VIII.

Sea Trees




Sea Trees

VIII. This is of the ſame colour, and but very little larger, as likewiſe of the ſame ſoft woolly ſubſtance, but without any twigs, and conſiſts in one flat thin and extended piece, not unlike the ear of a dog, full of pores and ſubtle branches, like green leaves when viewed againſt the light. Plate XIII.

IX. This is an orbicular fungous vegetable, of the colour of the former, but not a quarter of an ell long. At one extremity is a round pedicle two inches long, and at the other extremity an aperture, running quite through like the pith in elder. This vegetable is compreſſible, but elaſtic, immediately recovering its roundneſs; in ſoftneſs and delicacy, it exceeds any which I have ſeen, and unqueſtionably might be made uſe of by ſurgeons, if they could have it at pleaſure *.

X. This vegetable is ſomewhat harder, but ſmooth and fungous. Its colour is a dark brown; it is covered with a thin bark, the inſide of which is full of imperceptible, yet very ſharp points, of a vitreous nature, ſo that it may be uſed in poliſhing, but not with the naked hand; theſe points eaſily penetrating into the ſkin, and being as difficult to be got out. This grows, like the muſhroom, in deep grounds, and ſometimes weighs thirty-two pounds. The fiſhermen draw it up with their lines or nets.

XI. A vegetable three half-quarters of an ell in length, in figure not unlike the Liguſtrum, covered all over with multitudes of ſmall angular nodes, ſo cloſe, and at the ſame time ſo ſlenderly joined, that on the leaſt ſhaking of the branch ſome of them fall off. Theſe ſmall nodes, which to the naked eye appear like ſo many grains of buck-wheat, make a very ſplendid appearance thro' the microſcope, as if they were ſilver and gold laminæ, or ſhields curiouſly emboſſed with figures. The branch itſelf is round, black, and ſmooth.

XII. This is a very tender incurvated branch, whoſe ſhoots likewiſe are full of glittering points and angles, but its extremity perfectly reſembles the Conchæ anatiferæ, of which I ſhall ſpeak in another place, the only difference being that the muſcle-ſhell is inveſted with a thin browniſh tegument, and but of half the

* Concerning theſe ſpungy marine ſubſtances, ſome relate that they have a kind of Syſtole, and Diaſtole, are that in its moſt ſubtle parts theſe are diſcernible long after its being taken out of the ſea, till the total evaporation of all its moiſture.

bigneſs of theſe; tho', in time, it might have equalled it; three other long, but ſmaller muſcles, doubtleſs of the ſame kind, but thin and ſoft as a herring-ſcale, hanging on the ſide of this branch.

Concerning the quickneſs or ſlowneſs of the growth of theſe ſeveral vegetables, nothing can be advanced very poſitively; but of a certain ſort uſed in the Weſt-Indes for burning lime, father Labat relates, that he obſerved the branches to grow four or five foot in two years, tho' never above the ſurface of the water, yet growing there upon much higer grounds than hath fallen within our obſervation here. The branches on reaching the ſurface of the water, ſpreading themſelves as it were to avoid the air, for which their porous bodies are not adapted. If it be aſked, whether theſe ſea-trees bear any thing, which may properly be called a fruit or ſeed, though nothing like it has occurred to me or any of my correſpondents, yet along our ſea-coaſts one meets ſometimes with ſubſtances which favour the affirmative. Among theſe I particularly reckon one, to which I ſhall take the liberty of giving the appellation of Faba-marina, a ſea-bean. It is of the ſize of a cheſtnut, orbicular, yet flat, or as it were compreſſed on both ſides. Its colour is a dark brown yet in the middle, at the junction of the ſhells, it is variegated with a circle of a ſhining-black, and cloſe by that another of a lively red, which have a very pretty effect. The inſide of the ſhell is entirely black, but the kernel is of a pale yellow, and in taſte, when dried, not unlike a French-bean, ſo that could they be had in great quantities, a very good uſe might be made of them. Mr. Frederic Arentz, ſuperintendent in Syndfiord, who lately ſent me a ſample of them, ſays, that they were found among the Tang, and other ſea-weeds, which had been thrown up, and driven aſhore by the wind and waves, from whence they might be concluded to belong to the ſea, unleſs they are to paſs for an Indian vegetable of the tribe called Pediculus Elephantinus, which, by the loſs of ſome ſhip, was, in the courſe of time, brought to this coaſt. But having received ſome of theſe beans from another virtuoſo, who lives ſome miles from hence, the arrival of them on this coaſt, is more uſual, than agrees with any ſuch opinion. As to bringing this vegetable from the oppoſite coaſts of America, whence wood and the like are known to be

Voyage aux Iſles de l'Amerique, Tom. II. p. 557.

Sea-bean.

driven towards Iceland, this is ſo long a voyage, that the beans would infallibly putrify, or at leaſt be damaged before their arrival, which however is not the caſe, the taſte being, as is already obſerved, exactly that of the French-bean, without the leaſt mixture of the ſaline property. An account of this exceeds my comprehenſion, but it is ſo with the ſea-trees themſelves, or with their ſhoots and buds, which may be looked upon as their leaves. They are quite inſipid, tho', till dried, not without ſmell. Concerning theſe ſea-beans, I ſhall further add, that the famous Happelius mentions ſome marine berries without taſte, growing on thoſe weeds, which the Spaniards call Sargaſſo, and the Dutch, ſea-parſley, with which the ſea near Cape Verde is overgrown for ſeveral miles.

In Mundo Mural. T. 1. Lib. iii. cap. 6.

## SECT. IV.

From the deſcription of the above marine vegetables, or trees, eſpecially the pieces four, five, and ſix, they may be premature corals, the conſequence of their inward and outward parts being ſuch, that the principal or only difference lies in the want of hardneſs. If I could be convinced that the corals are not originally hard, but gradually become ſo, by a kind of petrefaction, I alſo ſhould ſubſcribe to that conjecture, but what ſuſpends my aſſent is *, that among the northern corals, ſome plants, which from their ſmallneſs may be judged to be young, yet in their firſt vegetation ſeem of a compleat hardneſs. This is confirmed by Pelſchoor, who ſays, "That the divers, who have been among the coral buſhes under water, found none ſoft, but of the like hardneſs as afterwards." Thus it is not the air which indurates them as O. Wormius imagines: Soliditatem demum debitam, ab aëre ambiente acquirit. This from the two following verſes, appears to have been alſo the opinion in the times of Ovid.

Northern corals.

Tyrocin. chyronic. Lib. II. cap. x. p. 153.

In Muſeſ. p. 231.

Sic et corallium, quô primùm contingit auras,
Tempore dureſcit: mollis fuit herba ſub undis.

Metam. Lib. XV.

* Sir Thomas Brown in his Pſeudodoxia, or Enquiries into Vulgar Errors, Lib. II. cap. v. p. 72, where he juſtly rejects the opinion of corals hardening after being brought into the air, yet believes that the ſaline petrific ſpirit in the water, does not at the ſame time operate univerſally on all the parts of a plant. All coral is not hard, and in many concreted plants, ſome parts remain unpetrified as wood.

Among

Among the Greeks they were not improperly called λιθοδένδρα; i. e. ſtone-trees, ſtone in ſubſtance, and trees in growth and figure. Among the branches of the ſeveral northern vegetables in my poſſeſſion, hang ſeveral ſoft filaments, about three inches in length, and the bigneſs of a ſtraw; theſe I look upon to be other marine plants different from the coral, tho' their colour, like that of the coral, is of a pure white. I have alſo perceived a brown oil or ſap to diſtil from the orifices of a coral capſula; which, as far as it reached, made a viſible alteration in the whiteneſs of the coral. I ſhall now exhibit a conciſe view of my collection of northern coral-plants, which were halled up in the fiſhing-nets, both here and in Sundmoer.

Deſcription of ſeveral corals.

1. A piece half an ell in length, and a quarter and half in breadth, its ſhoots open and expanded, with pretty large flowers, or ſtones; its colour perfectly white.

2. A thick piece almoſt round, with its twigs intermingled like a thorn, the ſtones ſmall and black, all the other parts yellowiſh.

See plate XIV. fig. A.

3. This is a quarter and half long, and a quarter of an ell in breadth, implicated almoſt like the former, but flatter; entirely white, the flowers much larger than the former, ſome of them even exceeding a ſhilling; and likewiſe expanded like a flower in full bloom, for which ſingular beauty I cauſed a draught of it to be taken.

4. A piece of conſiderable thickneſs, the main ſhoot much ſtronger than the former, with a large and globular node, like the capſula of a flower before its bloom; but the other twig has open ſtellated flowers, with a cavity larger than the former.

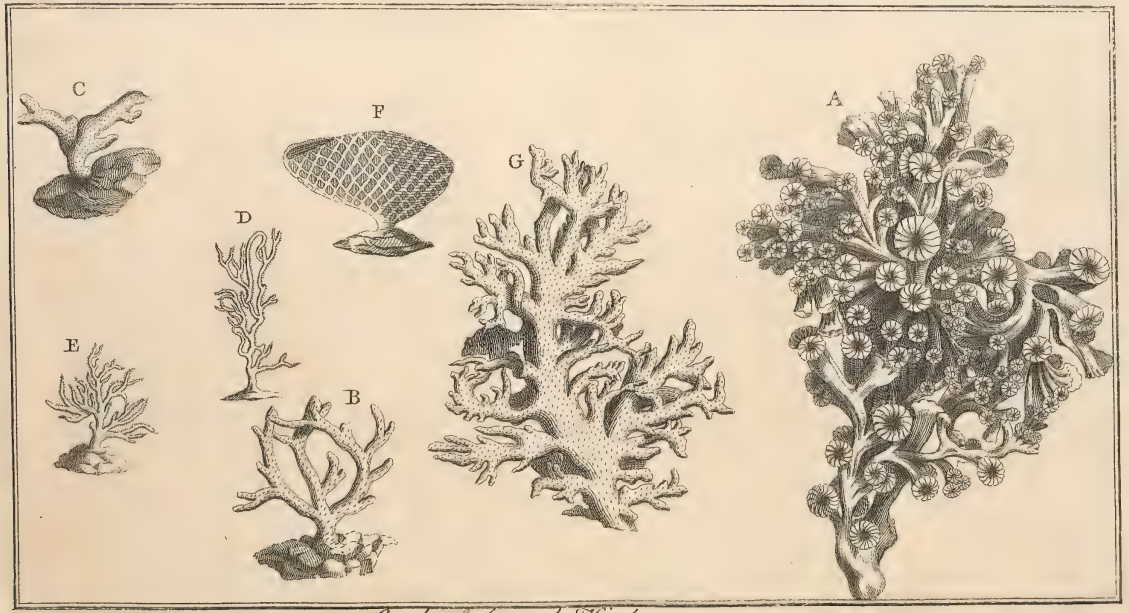
Fig. B. 5. A ſmall elegant coral ſhrub, with flat ſhoots, being an exact repreſentation of the extremities of a ſtag or rein-deer's antlers, adhering to a ſtone.

Fig. C. 6. Another of the ſame kind, likewiſe growing from a ſtone, of a greyiſh colour, as is the former.

Fig. D. 7. This is very ſlender, being a plant juſt beginning to open the ſtone.

Fig. E. 8. The like, but more expanded.

Fig. F. 9. This is no bigger than the tip of the finger, but formed in a manner, the like of which I have never ſeen. It ſomewhat reſembles




*Corals of Several Kinds*

ſembles a ſmall funnel, and its ſides form a beautiful web like the fineſt filigrin work, of a ſtraw-colour.

10. Of the ſame colour as the former, flat, with ſeveral pretty indented ſhoots, about a finger in length, and half as broad, but appears to have been much larger before it was detached from the body of the plant; which, when entire, muſt make a very beautiful appearance. Fig. G.

In Nordland are ſometimes found coral plants or ſhoots, of which one ſide is red and the other white, but, having never ſeen any, I cannot warrant the certainty of it; but I have a brown ſtone of the bigneſs of two fiſts, incruſtated with coralline ſubſtances, the external colour of which is carnation; but within it is of the whiteneſs of ſnow; it conſiſts of ſome hundreds of great and ſmall round boſſes or buds cloſe to each other, and forming an agreeable figure. Very probably theſe would have been bigger had they remained longer in the water. This piece I account a Madrepora abrotanoides tuberculis horizontaliter poſitis, and in a collection of the naturalia of Norway, I have ſince ſeen larger and taller plants of this nature. Some other kinds.

The fiſhermen often ſell coral buſhes to the apothecaries at Bergen, and, upon being aſked, what is their opinion about the origin and growth of this marine vegetable, they anſwer, that ſometimes a white drop is obſerved to fall from the branches of the old coral, as well as from the ſea-trees, as if it were milk or ſeed, and where this falls a vegetable is produced according to its ſpecies. This account is in ſome meaſure, confirmed by this, that the vegetable, number ſeven, has under it a white and flat macula like a root, ſpreading to the extent of the plant. The ſame likewiſe is further atteſted by Tavernier, in his travels to India, where he ſpeaks of the coral-fiſheries in the Mediterranean, but he is miſtaken, in imagining that not the leaſt ſprig of it was to be found in the whole ocean, our northern coaſts manifeſting the contrary: As to its medical uſes it has the character of being abſorbent, refrigirative, emollient, aſtringent, and ſtrengthening, which may be true, when the tincture of it, conſiſting of the extracted ſalts or oil, is adminiſtred inwardly; but, that the little beads, made of the coral (they not being as ſome imagine, fruits or little berries growing thereon,) are endued with any ſuch ſin-

gular virtue that when applied externally, or hung about the neck, they are a preſervative againſt the apoplexy, the plague, and other contagions, I cannot admit, having no evidence of it, but muſt leave it to reſt upon its own credit. It is certain that the dealers in coral at Genoa, and Marſeilles, have a great vent for their commodities in the eaſtern countries. Tournefort ſays, that all over the eaſt they wear necklaces and bracelets of coral beads brought from Marſeilles. Poſſibly could white coral be brought into faſhion, a diligent ſearch might procure as great a quantity in our ſeas *.

## CHAP. VII.

### Of ſeveral kinds of Gems and curious Stones in Norway.

SECT. I. *Of Pebbles.* SECT. II. *Marble of different fineneſs and colour, Spar, or glittering ſtones, Alabaſter, Chalk-ſtone, and the like.* SECT. III. *Sand-ſtone, Mill-ſtone and Slate.* SECT. IV. *Talk.* SECT. V. *The Magnet.* SECT. VI. *Amianthus, or Aſbeſtos.* SECT. VII. *Pyrites, and Quartz or Marcaſite.* SECT. VIII. *Cryſtal and Iſinglaſs.* SECT. IX. *Granate, Amethyſt, Chalcedony.* SECT. X. *Jaſper and Agate.* SECT. XI. *Thunderbolts, and other figurated ſtones.* SECT. XII. *Some ſtones plainly indicating their ſubſtance formerly to have been ſoft and fluid.*

IN the order I propoſed after the vegetables and plants in Norway, follow the ſeveral ſpecies of ſtones, with the ſeveral metals and minerals reſident in them; but in this ſeventh chapter, I ſhall confine myſelf to the former, referring the metals and minerals to the enſuing.

### SECT. I.

Of Pebbles.

It is the leſs neceſſary to dwell upon the common pebbles, of which the mountains here and in other parts chiefly conſiſt, they being well known; and I having offered my thoughts concerning them in the ſecond chapter, on the origin, formation, and different figures of the ſaid mountains; but one particular concerning theſe pebbles muſt not be omitted; which is, that a certain brown

A periſhable kind of pebble.

* Concerning the white coral fiſhed for in the lakes of Numidia, and which differs only in colour, Doctor Shaw, in Tom. II. App. p. 124. of his travels, ſays, that it is ſcarce, but whether it bears a higher price there, I am not informed.

kind of them decays with age ſo like old wood, to which, in its incurvated veins and channels it is not unlike, diſſolves between ones fingers; drops from the mountains into the ſea, and ſometimes occaſions the afore-mentioned calamity of a diſruption; ſo that the traveller round the Norway-coaſts, may find ſufficient proof to confute thoſe viſionaries of all ages, who have imagined the world to be eternal; and theſe proofs may be drawn a priori: For if the world were eternal, its decline could not be ſo conſpicuous as it is, within the few centuries, which we can compute with certainty. Time, the voracious conſumer of all things, exerts its corroſive power every where on the hardeſt rocks, but more remarkably in certain places; and whoever has lived any time on theſe coaſts muſt have obſerved the ſtones diſſolved, and the ſeparation begin in the veins, where the pores and ſofter ſubſtance ſooner yield to the daily impreſſions of the air and ſun. In many places the northern grey and black pebbles are intermixed with iron, copper, lead, ſilver, and even gold; of which we ſhall treat in the ſequel. Great quantities of theſe pebbles are at preſent uſed for building houſes, walls, and incloſures, eſpecially in and about Bergen, the neighbouring mountains furniſhing them with little labour, nature itſelf having as it were prepared them by fiſſures, into which, the wedges being driven, ſuch flat angular pieces fall of, that without being ſhaped by the chiſſel, they ſuit one another ſo well, as to form a compact wall. In ſome places, eſpecially at Gloppen in Nordfiord, I have been amazed to ſee whole mountains conſiſting of theſe pebbles naturally divided, and as it were cloven, almoſt of equal ſizes, that is, from two to three cubits each, as if they had been ſawed both longitudinally and tranſverſally. Theſe pieces are eaſily lifted with two hands, and reſemble the ruins of an old wall. Mr. Buffon ſpeaks of a mountain of the ſame nature near Fontainebleau. Theſe northern fragments lie near the creeks, and being eaſily embarked, might load ſeveral thouſand ſhips, the quantity being ſufficient to build large cities. How theſe regular fiſſures and ſeparations may moſt rationally be ſuppoſed to have happened, ſoon after the deluge in the originally ſoft, and afterwards gradually indurated pebbles, I have offered ſome conjectures in the ſecond chapter, which treats of the ſoil and mountains in general,

general, where I likewiſe conſidered the diſruptions or breaks of mountains. When a part of a rocky mountain, being undermined and detached, falls from its vaſt height, and in its fall happens to ſtrike on a hard ground, and is broke into ſome hundreds of ſmaller pieces, this collective body of fragments is called ſtenur, and the innumerable points and angles of thoſe broken ſtones render the roads extremely troubleſom, tho' ſometimes they are obſerved to lie in ſuch ſymetry, that their former coheſion may be judged from their concave and convex ſides. In the pariſh of Houg, three Norway-miles from Bergen, about twenty years ago, a very ſurpriſing accident happened to a man, who walking under a mountain, was on a ſudden entirely covered with the fall of ſuch a congeries of large ſtones, which formed a kind of vault around him. Here he remained unhurt for ſeveral weeks; his friends, who by his outcries had found the place of his confinement, knew not how to extricate him, the ſtones being immoveably large. They reached him meat, and drink, for ſome time by means of a pole, thro' the crevices, but at laſt, the ſtones fell in and cruſhed him.

Steenur.

## SECT. II.

Marble, which in moſt countries is ſo ſcarce, and bought up at ſo great a price, is found here in ſeveral places, and in ſuch quantities, that if all Europe were to be ſupplied from hence the quarries would not be exhauſted; for ſeveral ridges of mountains conſiſt almoſt wholly, or, however, chiefly of marble, upon breaking the lapidious incruſtation, which is a porous ſubſtance, and about an ell or two deep, as a tegument to the more precious marble, in compariſon with which, it appears to have a kind of foam or froth, interſperſed with ſmall orbicular cavities, as the ſurface of melted wax, or the like after its induration. I have elſewhere confirmed the opinion of the liquefaction of the rocks, as built on other unexceptionable grounds, excluſive of theſe incruſtations. Had the inquiſitive Mr. Tournefort reflected better on this truth, and the conſequences which may be drawn from it, he would not have been under a neceſſity of aſſenting to the ſtrange poſition of the vegitation of marble, to account for ſome ſhoots and excreſcences of marble found in a cave on the iſland of Antiparos,

Marble of ſeveral kinds.

ſome depending from the roof of a cave, others ſhooting out of the ground like trees or plants, which he actually repreſents them to be. His words are, Il ſemble, que le nature nous avoit voulu montrer par-la comment elle s'y prend pour la vegetation des pierres, il ſemble, que ces troncs de marbre vegetent, car outre qu'il ne tombe pas une ſeule goutte d'eau dans ce lieu, il n'eſt pas concevable, que des gouttes tombant de 23 ou 30 braſſes de haut ayent pu former des pieces cilindriques terminées en calotte, &c. So far he is right, that another origin of thoſe figures muſt be ſought here, than theſe Stalactites, as they are called, or drop-ſtones, which are frequently found in ſubterraneous caverns; yet there is no neceſſity of recurring to the vegetation of marble; a third cauſe offering itſelf, that theſe long ſhoots and drops are unqueſtionably an immediate work of nature, and may, or rather muſt have been produced at one time, and if they muſt be called vegetables, they may have ſprung up in a night, like muſhrooms, or perhaps, in an hour, or even a minute; and that during or immediately after the deluge, when the detached or liquefied ſtony ſubſtances began again to ſettle and conſolidate. In that caſe, it is not in the leaſt improbable, that ſome of the ſofteſt part of the marble, conſolidating laſt, ſhould meet with a reſiſtance from theſe parts of the marble, which had already ſubſided, and run into theſe ſhoots, cluſters, and other figures, in which they appear at preſent. This is moſt evident in marble and other hard ſtones, not only from other indications, for they manifeſtly contain ſolidum intra ſolidum; but particularly from the beautiful blendings of their colours, and ſpots, veins and ſtreaks, like a dried mixture of oil colours, which, when cut through, ſhew the like intermingled ſtreaks, as in our marble quarries. I myſelf am poſſeſſed of ſuch a piece of artificial marble, though I confeſs it is much dearer, and deficient in ſolidity, which only it can obtain in the laboratory of the ſupreme maſter of nature *.

* Poſſibly the ancients had the art of giving it its proper hardneſs, as muſt have been the caſe, if we ſuppoſe thoſe vaſt columns and obeliſks of Egyptian marble forty eight ells in height not brought to Rome in one entire piece, which appears difficult if not impoſſible, but to have been ſuch an artificial granate. Dr. Shaw, in his travels to the Levant, T. II. Ch. IV. p. 81, 82, ſays, ſome have imagined Pompey's column and the obeliſks of Rome, and Alexandria, to be an artificial compoſition of cement and ſands, caſt in a mould.

Moſt of the Norway marble-mountains are ſtill unknown as ſuch, and will in great meaſure continue to be of no advantage, except thoſe which are contiguous to the ſea or the creeks, for the ready ſhiping of the marble. I omit the mention of thoſe marble-mountains which I have obſerved in my journies, particularly at Lillemios in Walders, and elſewhere, much leſs ſhall I take upon me to give an account of the new marble-quarries undertaken at the charge of colonel Eigtveds, architect to his majeſty, and other proprietors, not far from Drammen, in the dioceſe of Aggerhuus. But, inſtead of theſe, I ſhall take notice of thoſe marble-quarries in the dioceſe of Bergen, which have been broke up within this century, chiefly by the family of Lilienſchiold, and partly carried on by others, of the produce of which the palace of Chriſtianſberg at Copenhagen is an illuſtrious inſtance. Some thouſands cubic feet of northern marble, have already been exported for that edifice, eſpecially from Muſterhaven, and continue ſtill to be carried thither, beſides the demands from England, Holland, Germany, and the countries on the Baltic, and even from Sweden itſelf, which is in no want of good marble, tho' the Norway is eſteemed better, notwithſtanding its extreme hardneſs renders it very difficult to be wrought; and tho' it cannot, as ſome pretend, to vie in whiteneſs with that of Carrara in Italy, or in fineneſs with that of Sicily and Egypt. The chief marble-quarries hitherto opened in this dioceſe, and their ſeveral kinds, are as follows:

Account of the principal marble.

1. Hopeholm, not far from Bergen, produces marble of a good white, likewiſe blue and white, alſo a greeniſh kind, with red ſtreaks.

2. Wikeneſs in Storoe, ſix Norway-miles ſouth of Bergen. The marble of this quarry is red and white, very fine and ſolid, but very difficult to be hewn into ſquares; likewiſe white intermixed with green with ſulphur-coloured veins, a kind of grey and white jaſper; green, with red ſtreaks of agate; laſtly, black and white; all very difficult to the workman.

3. Muſterhaven, ſeven Norway-miles ſouth of Bergen, not far from the noted high mountain Siggen. This quarry yields blue marble with white ſtreaks, dark blue with the like variegation, green

green with greyiſh veins, likewiſe an azure marble. This is eaſier to the chiſſel than in moſt places *.

4. Salthellen, four Norway-miles from Bergen, affords a white marble, and eaſily wrought, but is not ſo firm as that of Hopeholm, and breaks into longiſh blocks; it alſo affords a grey and white, likewiſe a dark grey ſtreaked with white.

5. Hillebrud, ſeven Norway-miles from Bergen, the marble of this quarry is white, with a yellowiſh tinge; it likewiſe produces a light-blue and white, both kinds very compleat, and in large blocks.

6. Stourſoen-quarry, one of our miles from the monaſtery of Halſnoe, yields black-marble ſtudded with white ſpots, and its blocks are large and compact.

7. Selloe, on the other ſide of this monaſtery, produces blue and white marble, in larger blocks than are to be met with any where.

To this tribe of ſtones belongs likewiſe the touch-ſtone, Lapis-lydius, being a kind of black-marble; alſo alabaſter, which I have met with in my journey to Sundmoer, near Borgenſund, but of a greyiſh caſt, and only in ſmall pieces, lying as an infuſed adventitious matter betwixt the ſtrata of hard pebbles; by the peaſants it is called Hejetel, under which name I have already ſpoke of it in the 2d chapter, concerning the origin of mountains. Under this ſpecies may alſo be comprehended the ſeveral kinds of ſpar, or other ſhining ſtones, like what is called Katzenſilber, which are eaſily reducible to a white powder, as are the chalk-ſtone, cement-ſtone, and ſtucco-ſtone, to which uſe likewiſe the ſtrictures of marble, which fly off in the quarries are applied.

## SECT. III.

Sandſtone is found in ſeveral places, of a clear and dark grey, yellow and brown, of a fine and coarſe grain, and is uſed either for building or for grind-ſtones, which laſt are in greateſt perfection at Hædæmark; but on account of the ſituation, the exportation of them is difficult, tho' conſiderable quantities are brought Sand-ſtones.

* I was lately preſented with a piece from this quarry, in which red, green, and white veins were intermixed, in a more beautiful manner than any I had ever ſeen; the only defect is the ſoftneſs of the green veins, which hinders a perfect poliſh.

to

to Skeen, and from thence carried abroad. The pariſh of Odde in Hardanger, affords as fine and firm ſand-ſtones as ever I ſaw, but not in any great quantities. I have been lately informed, that in the pariſh of Nordal in Sundmoer, there are large mountains entirely conſiſting of yellow and red ſand-ſtones.

Mill-ſtone. Mill-ſtone, which indeed is but another ſort of ſand, conſiſting of groſſer ſubſtances, but the texture thereof is both more compact and ſmooth; is exported from Guldbrandſdale, Syndford, and other places.

Baking-ſtone. Hardanger likewiſe affords the beſt Bagſteheller, i. e. Baking-ſtone, a flat thin and ſmooth ſtone, which being rounded, bread is baked on them, which is likewiſe done on iron plates. Theſe flat and thin ſtones likewiſe begin to be uſed for covering houſes and churches, as ſlate is in other places.

Slate. This in ſome parts is found in ſuch prodigious plenty, that not only the whole ground on which the city of Chriſtiania ſtands, but the adjacent country is little elſe than ſlate, Collæa lapis fiſſilis, ſplitting into laminæ, or conſiſting of a ſucceſſion of laminous ſtrata. But hereabouts the pieces are ſo ſmall, as not to be applicable to any particular uſe; nor have coals been found under it either here or elſewhere, as was ſuppoſed; from the ſimilarity of the ſubſtances, and the black loom intermixed with it being ſomewhat like coal, beſides the circumſtance of its ſplitting in the ſame manner as coal.

## SECT. IV.

Veeg-ſteen (ſoft or Talc-ſtone) both light and brown, and the fineſt ſorts of it otherwiſe called Talkſtein, Grytſtein, and by ſome Blodgryte and Cloverſtein, being very ſoft and eaſy to be cut, hewn, or ſawed, are to be found almoſt throughout this and all other provinces of Norway, but not every where in ſuch large pieces as at Stavenger, and the lordſhip of Sunderhord, from whence ſome ſhiploads were lately carried for the palace at Copenhagen *, and the late famous and ſtately cathedral of Dront-

* The Talkſtein is ſometimes found in and along with the hardeſt pebble-ſtone. Near Malmanger is a deep cavern in a mountain, now almoſt exhauſted, but formerly full of it. This corroborates what I have before ſaid, De ſolido intra ſolidum, and ſhews the probability that all lapidious maſſes were formerly ſoft and intermixed.

heim was ſaid to be built of this ſtone, as I have here found ſeveral churches, and other buildings of the ſame. This ſtone does not conſiſt of ſand or loomy particles, but of a fine ſlimy compact ſubſtance, which may be pulverized, when it ſhines like ſoap or tallow, but in the air becomes porous, and loſes it gloſs, as I have obſerved on the outſides of old churches, which, by length of time, looks as if they had been built of pumice-ſtone; this ſtone however is almoſt imperiſhable, even in fire, and on that account is by ſome uſed for hearths, ovens, and beacons. In Gulbrandſdale, cups, pans, pots and kettles, to the bigneſs of half a tun are made of it, as veſſels of this kind not only retain the heat, but according to Bromel, give a better taſte to what is boiled therein, than utenſils of any other ſubſtance. Of the dark green Talc, which is likewiſe uſed for caſting variety of figures; I have ſeen images, and other kinds of ſculpture, with as fine a poliſh, and in every reſpect as ſightly, as if of marble or ſerpentine, yet the latter would have taken up thrice the labour and time; for the Talc-ſtone, eſpecially of a good kind, is worked much eaſier than wood itſelf. Near Stavenger, is found a kind of Talc-ſtone, of ſuch a whiteneſs, that it is begun to be uſed there for powder, as it may be pulverized to an impalpable fineneſs; and I am inclined to think it would ſucceed better in painting than ceruſe. I alſo recollect to have read, if I miſtake not, in Tavernier, that the principal perſons in Armenia, make uſe of a white ſhining Talc-ſtone for painting, and as it were laquering their beſt apartments, and this Talc ſeems to be of the kind in queſtion. Of the powder of Talc-ſtone, which is like to the fineſt ſoap, and Talc-oil, an ointment is made for rendering the ſkin cloſe and ſmooth. The Muſeum Wolmianum mentions a kind of Norway Talc, with gold veins, but this muſt be extremely ſcarce.

In Litographia ſua Cana, p. 26.

## SECT. V.

The magnet; or loadſtone.

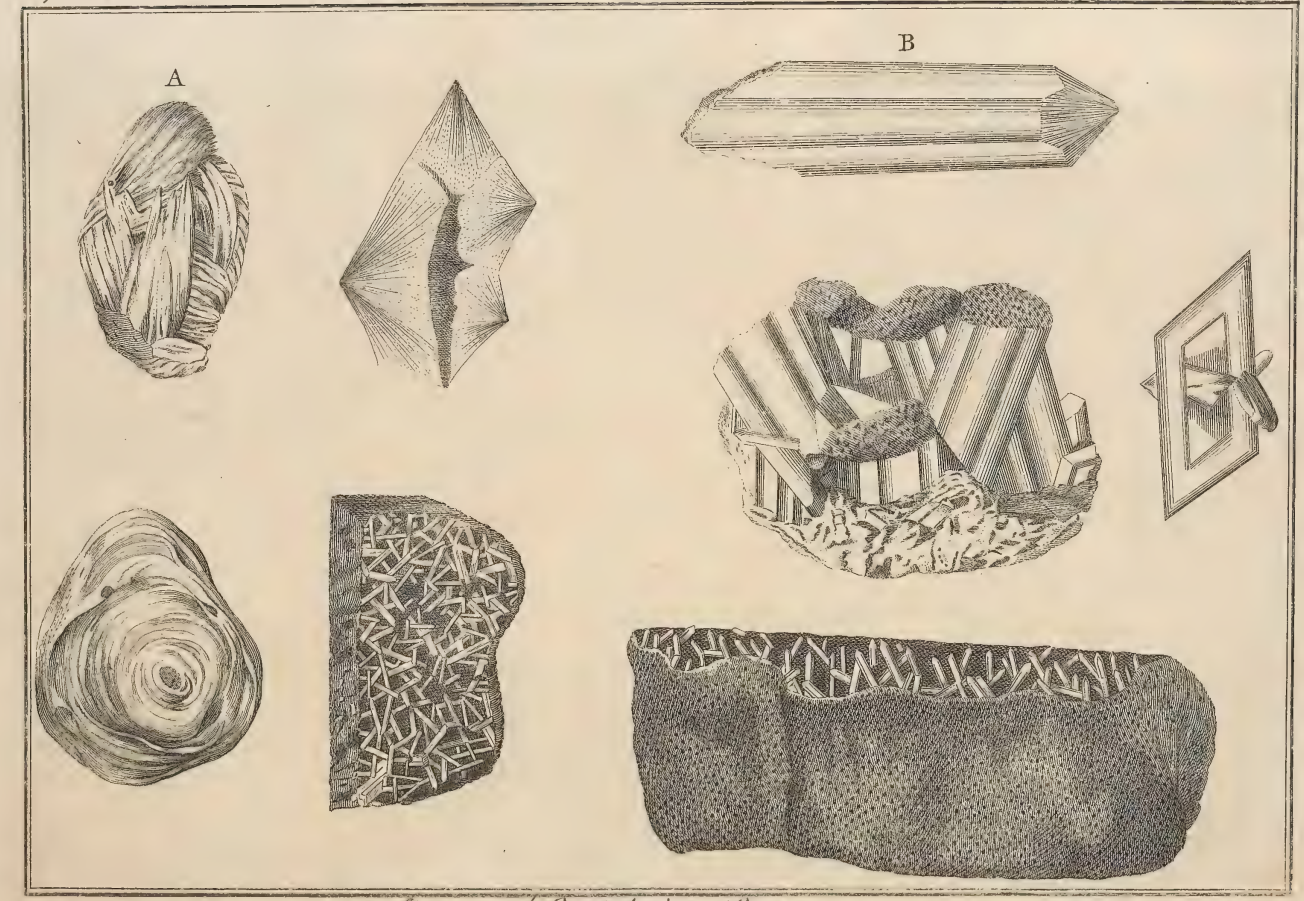
In the iron-mines near Kongſberg and Skeen, and likewiſe in ſome other places, is found that wonderful ſubſtance called the magnet, or loadſtone, and in ſuch quantities, that ſome tuns of it are exported, eſpecially to Amſterdam. Ol. Worm, beſtows on the northern loadſtone, the epithet of Viribus inſignem, what

might further be ſaid on it does not belong to this place; I therefore proceed to inſert what little I know of the lapis ſuillus, or ſwine's ſtone, a production peculiar to Norway and Sweden. It derives its name from its efficacy in the oraſiuke, a diſtemper incident to ſwine; it is alſo with as good reaſon by ſome called lapis fætidus, as when rubbed againſt any ſubſtance, it emits a nauſeous ſmell. The nature and texture of its parts is vitrious, nearly like the cryſtal; it likewiſe ſhines, but is brown, with a large mixture of ſulphur, which may be the cauſe of its fætid ſmell. In an iſland in Great Mios upon Hedemark, are whole mountains of this ſtone, which when galloped upon by ſhod horſes emit a violent ſtench.

## SECT. VI.

Amianthus, or aſbeſtos.

That the amianthus or aſbeſtos, which makes an incumbuſtible linnen or paper, is to be found in the pariſh of Waldens, I can affirm from my own experience on this occaſion; I had ſent for ſome ſamples of that wood, which was ſaid to be petrified by a certain water before-mentioned: Accordingly a large parcel of it was ſent to me, and at firſt I could have compared it only to hazle, which had lain a long time in the water, but upon a narrower inſpection, and drawing out ſome of the filaments, I found it was no petrified ſubſtance, but an amianthus, and far finer than the Greenland ſtone-flax, which the Rev. Mr. Egede, in his account of his miſſion, relates to be there uſed as wicks in the lamps, without being in the leaſt waſted whilſt ſupplied with oil or fat: This Sundmoer amianthus which is produced in a mountain in Birkdalſwamp, deſerves like that of Siberia, and even better, to be called ſtone-ſilk, rather than ſtone-flax, its fibres being both ſofter and finer; I alſo made a wick for a lamp of it, and it was not conſumed, but its light being much dimmer than that of cotton, I laid it aſide. I have alſo in my poſſeſſion a piece of paper of this aſbeſtos, which when thrown into a fierce fire is not in the leaſt waſted, excepting only that what was written on it totally diſappears. The manner of preparing this ſtone-ſilk, or ſtone-flax is briefly this; the ſtone after being ſoftened in water, is beaten with a moderate force, till the fibres, or long threads ſeparate from each other, afterwards they are carefully, and repeatedly




Stones and Crystals in Norway.

peatedly washed till cleared of all terene particles; then the flax is dried in a sieve that the water may run off the sooner; all that remains now, is to spin these fine filaments, wherein great care is required, besides which, the fingers must be softened with oil, that they may be the more supple and pliant. That Kircher and others should have mistaken this stone for the alumen plumosum *, and imagined it to be an allum fire-proof, appears hardly probable, especially as allum has a very acrimonious and peculiar taste, which this stone is so far from having, that it is as void of taste as any other stone can possibly be.

## SECT. VII.

A physical singularity here, is, that a country thus abounding in stones has no flints, so that those used in fire arms are imported from Denmark, or Germany. In all my circuits, I have never seen a flint-stone in Norway, and all whom I have enquired of agree that if there are any, they never have been discovered: But on the other hand, the mineral mountains produce a kind of pyrites or fire-stone, namely, the quartz, as it is called, which at first sight resembles the before-mentioned spar, or such glittering vitrious stones; but that it is of a different kind appears from hence, that in the fire it is not reduced to lime or stucco as those are; but becomes fluid, and is therefore used in the glass-houses.

No flints.

Fire-stone or quartz.

## SECT. VIII.

This quartz or marcasia, is of very near affinity to the Norway crystal, of which there are great quantities both here and in the other provinces, and of a larger size than most of those in Switzerland, Bohemia, and other parts. The mountains are the proper native place of the crystals, which sometimes are seen suspended on them, and glitter in the sun to the amazement of strangers; but these are liable to be washed away into the rivers, and from thence into the lakes; and this is the only way I can account for crystal being found in the great mios, as it certainly is. Mr. Peter Underlin in his topography of Norway, mentions

Crystal. Plate 15.

* Dico itaque hunc lapidem esse compositum ex certa aluminis seu talci specie, ut proinde eum multi alumen sciffile aut alumen plumæ nominandum putarint, est enim multo mollioribus filamentis etc. Mund. subterran. Lib. VIII. Sect. III. cap. 1. p. 67.

his having a piece of cryſtal as a very extraordinary curioſity, of four ounces weight taken from thence, but this is trifling in compariſon with a piece found in Hardanger, and now in my hands, which is within an ounce of five pounds in weight, twelve inches in length, and ſeven in thickneſs, and I never ſaw ſo large a fruſtum of the angular and conical kind, tho' it muſt have been larger, with little projections from its ſides, which the former owner confeſſes he broke off for preſents, ſo that now there remain only four uniform angles; but two of them have ſince had the fate of the former. I have ſeveral ſmaller pieces of an hexagon figure, with the extremity terminating in a point *; theſe regular, ſexangular, and conical cryſtals are by our peaſants called duergnagler, dwarfs-nails, from an old notion, that theſe were nails which the dwarfs, who, they imagine, formerly dwelt in the mountains, threw away as quite unneceſſary to them, as being without heads. But the general name for the cryſtals here are biergdraaber, mountain-drops, which name correſponds with the accounts of the naturaliſts of the origin of cryſtals, and happily expreſſes that ſort which hang on the mountains, in the ſhape of grapes, or other indeterminate figures. On the other hand, I know from experience, the afore-mention'd long and regular pieces, which are all ſexangular, are generated in a chalky porous ſtone, in ſhape like a drop-ſtone, having a piece of it which was found in a mountain, near the pariſh of Forde in this province of Sundfiord; this is a little larger than a hand, though twice as thick, but filled both longitudinally and tranſverſally with theſe minute priſmatic cryſtals, hundreds of them projecting, as if drawn through with a larding-pin; ſo that I place a great value

* How this moiſture of the quartz, or marcaſia, dropping from the mountains becomes indurated, and in time produces a vitrifaction or cryſtalization, is in ſome meaſure illuſtrated by J. Fr. Henken, in his pyrotoligy, chapter 5. page 354. and likewiſe the cauſe of its hexagon figure, in the manner of the ſaline rays, ibid. p. 362. Likewiſe Kircher, in Mundo ſubterr. Lib. VIII. Sect. 1. p. 25. Act. Societ. Hafn. Tom. III. p. 281. Leibnitz Protog. Sect. XXVIII. p. 44. Within theſe mountain-drops, is ſometimes incloſed another heterogenous ſubſtance ſhining like ſilver, and by the ignorant thought to be ſo. I have ſome ſuch pieces, which I accounted firſt rare curioſities, till a more experienced friend of mine ſhewed me, that upon being rubbed or pulverized their luſtre vaniſhed, and the ſuppoſed ſilver turned into a terrene ſediment. Argenti flores appellant fodinarum magiſtri, albas guttulas, quæ cryſtallis atque mineris inſident et quaſi ſementum eſſent argenti, apud eorum nonnullos maximam habent eſtimationem etiam raritatis titulo. Quamvis autem haberi et eſſe forſan poſſint inchoamentum argenti, nondum tamen id penitus obſervationes perſuadere voluerunt. Aloyſ. Com. Marſili. Danub. Panon. T. III. page 168.

upon this piece of ſtone, as a manifeſt mother of cryſtal *. Were it not for the yellowiſh caſt, too common in theſe northern cryſtals, like thoſe of Bohemia, and Hungary, they might juſtly deſerve the appellation of Norway-diamonds, which Mr. Arent Berendſen confers on them; for the original eſſence and formation of the diamond, namely, a filtrated, vitrified, denſe, indurated mineral juice is likewiſe that of theſe cryſtals, the whole difference being, that the filtration here is leſs perfect. It appears, however, that as nature in other things ſometimes deviates from her general rule, working either more delicately or coarſely than uſual, ſo the northern cryſtals may be accounted ſuch deviations, from her general rule in the formation of diamonds, or Norway mountain-drops. A certain officer of reputation of the diſtrict of Hardanger, a few years ago ſent to London two ſtones found there, in order to have them made into a pair of ear-rings for his lady. When the merchant to whom he had given this commiſſion, called upon the lapidary for them, he was aſked what he looked upon thoſe ſtones to be, the merchant anſwered, Norway-cryſtals, then replied the lapidary, give me a note of hand that they ſhall not be paſſed for real diamonds, which the merchant very readily did. I mention this little ſtory, partly to ſhew quantum eſt in rebus inane, and how, in matters which are highly eſtimated, and ſometimes deſerve ſo to be, the world is more governed by imagination than reality, as otherwiſe there could not be at leaſt that

* Cryſtallus montana (prout ex pluribus obſervationibus feliciter didicimus) non eſt aliud quam ramificatio ſeu propagatio duriſſimi ſilicis, quartz, lactei ſæpius coloris ac opaci, cujus dorſum ſi compluribus compreſſum ſtratis, interius tamen aliquid vacui ſortiatur, intra quod libere valeat in ramulos propagari, tunc generatur cryſtallus (non vero ex aqua gelu in montibus vehementiore concreta, (ut Plinius, Seneca aliique non pauci tradiderunt.) Quod ſi cinnabris effluvia ipſius ſeſe commiſceant vegetationi (quod nobis plerumque videre contigit in argentifodinis) tunc eidem amethyſti colorem non tam rarò impertiunt. Et rem ſane veroſimiliter ſic ſe habere, per Helveticas Alpes ad montem S. Gotthardi, anno 1682, iter facientes amplius intelleximus ac edocti ſumus ibi à foſſoribus cryſtallos eruentibus. Hi ſiquidem in pluribus nobis monſtrarunt ventriculum ſeu cavitatem quandam, cujus parietibus majori ex parte ſubſternebatur ſilex ſeu quartz, intra illam cavitatem vegetans, cujus puriores ac tenuiores partes filtratione quadam à reliquis ſegregatæ ac ſenſim concreſcentes aſſurgebant ſeu diſtendebantur in conos cryſtallorum angulares, Aloyſ. Com. Marſili Danub. Panon. Tom. III. p. 89. This is further worth obſerving, that as the effluvia of cinnabar veins in the mountains, by the tinge, which they communicate to cryſtals, make amethyſts of them, the turquoiſe and emerald in the like manner owe their colours to vitriol. P. I. page 100. The abſurdity of that opinion of Pliny, Seneca, and other ancient naturaliſts of the formation of cryſtal like ice, by an intenſe froſt, has been more than ſufficiently expoſed by Sir Tho. Brown in his vulgar errors, Lib. II. cap. 1. p. 37.

immenſe diſparity in the price of our native and the Oriental ſtones. I have among my ſmall collection of Norway-cryſtals, a piece ſo clear and pure, and withal not vitrious, that in the judgment of the connoiſſeurs, it might be cut into a very exquiſite jewel *.

Marienglas. Iſinglaſs. Among the Norway-cryſtals is alſo reckoned the Marienglas, Iſinglaſs, or Ryſglaſs, as it is called here, being moſtly found in Ruſſia, where, on account of its tranſparency, it is uſed for window-panes. This is a particular ſpecies of ſtone lying in ſtrata, or flakes, or like ſo many ſheets of paper, and as eaſily ſeparated. I have a piece of dark red, which is very uncommon, it being generally clear or greyiſh. Wormius, who had never ſeen any of this colour, page 56 of his Muſæum, ſays, that this Ruſſian-glaſs is ſometimes found in marble, and ſometimes in hexagon figures, like the above-mentioned mountain-cryſtals.

## SECT. IX.

Granates. Granates, which derive their name from the ſimilarity of their dark red colour, with that of the kernels of the pomegranets, are found at Kongſberg, in Gulbranſdale, Oſterdale *, and other parts, and not ſeldom incloſed in other maſſes of ſtone; and Mr. Bromel ſays, that in Norway, as Jempteland, many mill-ſtones are mixed with granates, but the few in my poſſeſſion, or which I ſee elſewhere, and are of the ſize of a middling hazle-nut, with many angles, have no particular luſtre, and are foul, or as the phraſe is, not ripe. Thoſe mentioned by Olig Jacobeus, among the northern curioſities in the Muſeum regium, I ſuppoſe, make a better appearance.

In Lithographia Suec. P. 45.

Page 34.

Amethiſts. Norway amathiſts are likewiſe mentioned there, but with the addition that they want the hardneſs of the Oriental. The ſame author, page 32, likewiſe mentions another ſtone, which he thus deſcribes, Pyrites aureus teſſelatus, maculis purpureis ac hyacinthinis hinc inde diſtinctis ex oſterdalia Norvægiæ.

* Cryſtallos puriores Americanis ſuppeditat Norvegia noſtra, ut ex ſpecimine tranſmiſſo videbis. Ep. Ol. Wormii, Tom. II. p. 820.

† Reperiuntur etiam Norvegia dodecalatorum impuriores, vena talci plerumque infecti, colore ad nigredinem tendentes, ut eò primum genus Orientalium æmulari videantur, natura quandoque politi. Tantæ magnitudinis mihi unus eſt, ut ovum columbinum ſuperet. Creſcunt in vena talci tanta copia, ut ex iis cum vena ſua junctis, lapides molares conficiant. Ol. Worm. Muſ. p. 104.

The

The Ferro-islands afford plenty of Chalcedonies, but which are not above twice the bigness of a pea, very seldom reaching that of a hazel-nut, of which size I have some in my collection. The Museum Womianum, page 98, mentions two of an oblong figure, and of the bigness of a man's thumb, and he also speaks in the following manner of those of Iceland: "Chalcedonium islandicum cristalloidem voco lapidem. Massa est unciarum duarum longitudine, totidem latitudine, qua latior est. Parte qua cauli adhæsit, saxo constat albo, duro, cui nigredinis quidpiam permistum, ex quo efflorescit crusta quædam calcedonica, crassitie calami scriptorii. Hæc vero ex se papillaceas quasdam strias protrudit ejusdem substantiæ, externa superficie asperas instar sacchari candidi, granulis minutis micantes. Parte anteriore tres sunt papillæ, quarum media reliquis longior, una reliquis minor, versus latiorem partem una duplicata. Omnes hæ papillæ, ut et corporis ipsius tota superficies superior quasi conglaciata est, splendentibus granulis crystallinis aspera. Elegans certe est, a nemine, quod sciam, descripta." Of these glittering and angular little grains, which are said to adhere to the island Chalcedonies, there are frequently found deep in the earth many white muscle-shells, quite full; an indisputable effect of the deluge; these bodies, when liquid, having insinuated themselves into these shells, where they afterwards became indurated; and I myself have some of this kind in my musæum. Chalcedony.

## SECT. X.

Agate of several kinds are produced here, and I have some pieces of red and yellowish, which were found in Sundmoer, and the same abound in other places. The ground near the parsonage of Findaas, is said to be full of large veins of agate; but generally so hard as not to be wrought in any other manner than by grinding. Baron Holberg, in his Present State of Denmark and Norway, says the like of a kind of hard but beautiful jasper, found in a mountain two Norway miles N. W. of the parsonage of Sillejord, of which governor Wibel, in the year 1726, had a set of tea-cups made, for a present to his majesty Frederic IV. Agate.

Among several small pieces of green jasper, found in the Ferro-islands, Ol. Wormius mentions the following: "Quedam Turcoides, æmulantur, quædam Malachites, quædam in matricibus suis In Mus. p. 94.

exiſtentes jucundum diſpicientibus præbent ſpectaculum---Inter jaſpides ex inſulis Ferröenſibus allatas, reperiuntur etiam jaſponiches numero haud exiguo, videtur enim natura in iſtis inſulis intenta eſſe, ut onichen viridi colore tingat, verum opus ſuum ubi impedita non abſolvit remanet jaſponix, quin et jaſpidis capnitis hic viſuntur ſpecimina.'

## SECT. XI.

Figurated ſtones.

Of figured ſtones I have ſeveral, ſome of which were found in Norway, but ſhall not enlarge on theſe, as not being peculiar to the country; yet, I cannot ſuppreſs the obſervations of a judicious perſon on ſome ſmall circular, and flat ſtones, perfectly ſmooth, and of a mixed ſubſtance, dark brown, yellow, and grey roundiſh ſpecks being blended among one another; but they are ſometimes found as big as a hen's egg, and by the peaſants called loſpeſteen, looſening-ſtones, from their opinion, that they are beneficial to women in hard labours. They alſo pretend, that this ſtone is the ſuppoſed thunderbolt, it being found where the lightning has penetrated, and as it were plowed up a furrow on the mountains. I leave this without any comment, yet I beg leave to inſert the words of the above-mentioned perſon, Mr. Fred. Arndtz, ſuperintendant at Sundfiord, and miniſter at Itſkevold, in a letter to me, of the 22d of September, 1750.

"My Lord, I take the liberty to ſend you in the box which comes along with this, a ſmall ſtone lately come into my hands, and of which, I own the curioſity to conſiſt only in the account which the peaſants have given me of it. They ſay, that the thunder darts down ſuch ſtones, aiming them at the Troll (a kind of witches, or infernal ſpirits of the night) who otherwiſe would deſtroy the whole world, and it makes uſe of theſe ſtones for bullets. The reaſon on which they attribute theſe ſtones to the thunder, is, that they are commonly found in thoſe places, where the earth has been torn up by a violent thunder-clap; the uſual ſize of this ſtone is like that before you, though the largeſt, both in figure and dimenſions, entirely reſemble a hen's egg. That the thunder tears up the earth into a kind of long furrows is very certain. I have ſeen it myſelf here in Sundfiord, and in ſuch furrows theſe ſtones are found: this the people affirm very poſitively, offering ſeveral inſtances

ſtances in proof of it. I am aware, that all that is ſaid of theſe thunder-ſtones, is by many looked upon as mere fables, and I myſelf cannot entirely come into many of theſe traditions; as that in a violent tempeſt, theſe ſtones have ſtruck againſt a ſhip's ſail and dropped down upon the deck, or that a woman who was at work at her quilting-frame, when the whole houſe was ſuddenly deſtroyed by a clap of thunder, but ſhe not in the leaſt hurt, found ſuch a ſmall ſtone lying on her frame. However ſome maintain the truth of theſe things, and have not the courage to refuſe hiſtorical credit to accounts of this nature, and indeed they are not entirely deſtitute of all veriſimi litude, if the production of the ſtone be conſidered, its primordial element being a ſlimy water, mixed with matter and inſpiſſated by fire, whence a petrifying juice. The ſtucco works are ſuppoſed to afford a ſpecimen of ſuch a mixture, which are ſomewhat hardened by the infuſion of a ſmall quantity of water, but by the infuſion of oil acquire the ſolidity of ſtone. That ſuch a materia lenta et viſcoſa may aſcend into the air is undeniable; that the lightening may have very wonderful effects in the atmoſphere muſt alſo be granted, and that a ſolid compreſſed body by its own gravity deſcends is natural. But there ſeems, notwithſtanding, leſs difficulty to comprehend the thunder-ſtones formation in the earth for the wonderful force of thunder, of which there are ſo many inconteſtible evidences, and of which I myſelf have ſeen ſome in the bayliff's houſe at Turre, ſhould eaſily induce us to ſubſcribe to the following words of a learned man, Radios fulminares terram penetrantes, arenam, quam forte offendunt, in talem aliquam maſſam lapideam per vitrificationem quandam colligere. I ſuſpend my judgment herein, and only add, agreeably to my deſign, that this ſtone is by the peaſants called laaſneſteine, i. e. looſening-ſtone, from the effects attributed to it; for the women, and eſpecially the old nurſes, imagine this ſtone to be ſomething exceeding ſacred; and it is with great difficulty they can be brought ſo much as to ſhew it, much leſs to part with it; from their perſuaſion, that beer drawn in a cup with this ſtone in it, being given to a woman in labour, facilitates the delivery; or as the peaſants phraſe is, dælaaſne, i. e. the fœtus is looſened, ſolvitur vinculum rumpitur." So far this letter.

Thunder-ſtones.

The ceraunei lapide, thunderbolts, which were formerly accounted thunder-ſtones, are now unanimouſly allowed to be ſtones artificially wrought into axes, hammers, wedges, and knives, which in the heatheniſh times were uſed at ſuch ſacrifices, as, according to their ſuperſtition, did not admit the uſe of a tool, or inſtrument of any other ſubſtance; they are found both here and in Denmark, and chiefly on ſuch eminences as were appointed for ſacrificing. I have them of different ſubſtances, colour, ſize, and figure. The laſt has the ſtrongeſt marks of being the work of art and not a natural form, eſpecially in thoſe which have a circular hole where the handle or graſp was inſerted.

Eagle-ſtone.

Aetites, or the eagle-ſtone, is found here as in other parts in the neſts of eagles, who, probably, lay it there, to moderate the violent heat exhaling from the breaſt of the dam, the eagle being a bird of extreme heat. They are generally of a dark yellow, oblong, and conical at both ends. I have one, which when ſhook, rattles, ſome ſolid body unqueſtionably being incloſed therein. Of the ſeveral virtues aſcribed to it, Ol. Wormius diſcourſes more than becomes him, fancy and ſuperſtition having in my opinion the greateſt ſhare in them.

Meſeurs, p. 78.

## SECT. XII.

Stones plainly ſhewing their ſubſtance to be ſoft and fluid but ſuddenly indurated. Plate 15.

I ſhall now in a few words mention ſome pieces of ſtone in my collection, which at firſt ſight confirm what I have before ſaid on the origin of rocks, namely, that the ſubſtance of marble, and of the moſt denſe and ſolid ſtones were formerly, and probably at the time of the deluge, ſoft and fluid, but afterwards coagulated or ſubſided into their preſent ſituation, like metals after fuſion. Of this I ſay, four pieces of ſtone are palpable proofs; the firſt has very much the appearance of a ſmall parcel of hog's-briſtles, with their thick ends inverted againſt each other, and with a ſtraightneſs which ſhews the rapidity of their fluid motion, this piece is white; the ſecond piece is a connexion of ſeveral very remarkable diſtinct quadrangular parts, each of the length of a larding-pin, but of the thickneſs of a ſtraw, paſſing through each other ſometimes longitudinally, ſometimes tranſverſally; it is of a dark brown, and vitreous. The third piece conſiſts of long, fine, light-grey ſtriæ, ten and more in a ſucceſſion, and others of a like fi-

gure in an oppoſite direction, compreſſed together like rays. In the fiſſures are ſome ſmall ſparks of metal. The fourth piece has coaleſced into the roundiſhneſs of a cake, and is compoſed of many circles, gradually contracting themſelves, and proceeding one from the other to the center, ſo that the laſt motion of the matter of this ſtone muſt have been circular; this ſtone is dark grey.

The different ſhapes of theſe lapidious ſubſtances, by caſual alterations, remind me of a particular in Oſterdale in the mountain of Svuku, on the borders of Sweden, which never fails to excite the admiration of the curious, and it may juſtly be looked upon as one of the moſt ſingular monuments of the deluge. Mr. Dantilas gives a good account of it in a memoir which he read in the year 1742, before the royal academy of ſciences in Sweden, and has ſince been publiſhed, of which the following is an extract, " The higheſt creſt of the mountain of Svuku in Oeſterdalen, a province of Norway, lies, according to a ſurvey taken by the barometer, above two thouſand ells higher than the lake of Famund, a water betwixt the mountains. This mount conſiſts of one ſolid, hard ſand-ſtone; on the top of the mountain ſtands a ſolid huge maſs of the ſame ſtone, which bears in it many marks of a diſſolution and diſruption, which can be attributed to nothing but water. For at the foot of this maſs, yet on the ſummit of the mountain towards the ſouth, are ſeveral parallel channels, three or four fingers deep, and of the like breadth, which at laſt meet; they appear to be the work of ſome miner, but upon viewing them on the ſummit, the moſt manifeſt indications ſhew themſelves, as if the water had cut itſelf a paſſage along ſome heaps of clay, ſo that unqueſtionably the true cauſe of this ſingularity is to be ſought in the impetus and agitation of the waters.

Remarkable figure of a ſtone on the mountain of Svuku.

CHAP.

## CHAP. VIII.

### Of the Metals and Minerals in Norway.

SECT. I. *Of the mines in general.* SECT. II. *Several gold-mines formerly opened, but discontinued.* SECT. III. *Silver-mines of more ancient times.* SECT. IV. *The present flourishing silver-works at Kongsberg.* SECT. V. *The silver-works at Jarlsberg.* SECT. VI. *Copper-works at Noraas.* SECT. VII. *The like at Meldel, or Lykken.* SECT. VIII. *Also at Einsett, or Quikne.* SECT. IX. *At Selboe.* SECT. X. *At Fongdal.* SECT. XI. *In Aardal, and Oedal.* SECT. XII. *Of Norway-iron in general.* SECT. XIII. *Account of several iron-works.* SECT. XIV. *Some lead-mines.* SECT. XV. *Quick-silver.* SECT. XVI. *Sulphur.* SECT. XVII. *Salt.* SECT. XVIII. *Vitriol.* SECT. XIX. *Allum.* SECT. XX. *Oaker, and several other kinds of dyes.*

### SECT. I.

Of the mines in general.

THAT the lapideous kingdom, in Norway, contains a vast treasure of metals and minerals, is not unknown, especially in this century, when the breaking, removal, and fusion of the silver, copper, iron, and lead, especially in the dioceses of Aggerhuus and Drontheim, employ many thousand hands, besides the great profits accruing from them to the proprietors, or sharers, exclusive also of the advantages to the peasants and other landmen by burning charcoal, and bringing it to the founderies belonging to those mines. That the use and advantage of the Norway subterraneous treasures, has been so greatly improved within the last hundred years, that the produce has been doubled, is unquestionable, and what further prosperity it shall please providence to grant to the minors, for their direction and continual progress in these dark subterraneous tracts, where the guidance of an all-wise hand is as sensibly requisite, as in any undertaking whatever, must be left to him, whose providence in its own time, distributes to every generation those blessings, or establishes its welfare on those things of which it stands most in need; and there is not a more striking instance than this, of the superintending wisdom, and œconomical goodness of God, throughout the whole system of nature. I know not what account to make of Paracelsus's pompous prediction of a golded age to the northern countries, affirming that betwixt the sixtieth and seventieth degree of northern latitude, time should display a store of wealth

in metals, ſuperior to all the treaſures that ever the eaſt afforded *.

## SECT. II.

Should time verify this prediction, the generation then in being muſt conſtrue it an accompliſhment of the words of Job, xxxvii. 2. *from the north cometh gold*; for in the year 1697, when, although prematurely, Paracelſus's golden age was thought to be at hand, a golden mine being diſcovered, the abovementioned words were the impreſſion on one ſide of the ducats, with the image of Chriſtian V. on the other. The number of them however was inconſiderable, the mine ſoon failing, but in fineneſs the gold was equal to that of Hungary. And ſometime before, namely in 1644, and 1645, Mr. Berenſen relates, page 274, that near Aggeſide, or in the dioceſe of Chriſtianſand, on the eſtate of Mr. Chriſtopher Gios, gold ore was found †, from which thoſe ducats were ſtruck, which the foreigners would by no means believe to be of Norway-gold, from a falſe prepoſſeſſion that Norway afforded no ſuch precious metal. However, Chriſtian IV. to avoid the charge of an oſtentatious parade, in decking himſelf with foreign feathers, in the year 1647, ordered other ducats to be ſtruck of the ſame gold, which were called Spectacle-ducats, the reverſe of them being a pair of ſpectacles with this legend, Vide mira domi ‡. The

* I cannot ſpecify the place in his writings, having only met with it in Scaffer's Lapland, quoted from Turnæus, and it is repeated by Mr. Peter Hogſtrom, in his Deſcription of Lapland.

† Anno 1644, Nobiliſſ. D. Jo. Sigfrid de Lutichau, rei metallicæ in Norv. Præfectus generalis, minera auri invenit in tractu Nedenecenſi prope portum Arndalenſem et curiam Barlo, nigram talcoſam, frequentibus ſplendentem micis, in cujus bonitatem cum inquiſiviſſet, invenit pondo centenarium ejus mineræ præbere auri puri marcas triginta octo, et inſuper centum quadraginta ſex marcas argenti.—Aliam alterius venæ maſſam Anno 1646, quæ ignibus depurata, ex libra una, auri puri dedit drachmas ſex, præſente Reg. M. fruſtrum quod teneo minutioribus ſplendet micis et priori magis ad rubidinem vergit. Adductæ ſunt ex eodem loco mineræ talcoſæ itidem ex frequentibus granatis prægnantes, quas auro ſcatere multi exiſtimant. Hanc mineram Anno 1646, Regi ipſi detexit ruſticus quidam Gammel Grodewyn, i. e. old Grodewyn, dictus. Sita fodina eſt ad portum Marede dictum (this muſt be Mardoe) extractu Nidroſienſi lapis quidam arenoſus aureis ſcatens ſcintillis et granulis minutis, mihi allitus et talci aurei nigreſcentis ſquamulæ, ex quibus aurum erui volunt. In argentifodinis Norv. prope Regiomontum putens Brunſwig dictus, aurum præbet, refert namque D. Normand, quod A. 1630, d. 3. April. 7, marcæ et ſex unciæ cum dimidia, auri unciam ſemis obtenuerit. Ol. Worm. in Muſæo, page 115.

‡ Theſe are, doubtleſs, the gold-mines meant by Olig. Jacobeus in his Muſæum Regium, p. 31, Mineræ duæ auri e fodinis Norveg. quarum una intermixtam ſibi habet

The before quoted authentic writer Mr. A. Berendſen, in the ſame place, ſays, that a large ſpecimen of the gold ore found on the ſide of Agde, being ſent to Copenhagen, the concluſion was, that it would barely anſwer the expence of working it; upon which it was diſcontinued. The like may be ſaid of that ſmall mixture of gold, which is often ſeen, not only in the Norway-ſilver, but even in the copper. The charges of ſeparating and refining it, leaving no proſpect of further advantage; and therefore the work is neglected. However, my ſubject being rather the nature of things than the benefits of them, I muſt here take the liberty to contradict a writer, in other reſpects of the higheſt merit, I mean the celebrated Aleyſius, Count Marſilli, whoſe works have gained him ſuch an extenſive reputation, who ſays, that hungary is the only country where ſilver is found intermixed with gold; of which our miners know the contrary *.

## SECT. III.

As to the northern ſilver-mines, which are unqueſtionably one of the greateſt diſtinctions of this country, I muſt premiſe, that excluſive of thoſe at preſent in work, namely, Konſberg and Jarlſberg, ſome were found formerly, and more of late, but have not been rightly ſearched, or the working of them has been diſcon-

habet materiam, quæ quartzum metallurgis appellatur, altera pyritis ſpeciem, quæ kies vulgo dicitur, A. 1644, rei metallicæ in Norvegiæ præfectus mineram quoque auri in tractu Necnecenſi (this muſt be Nedenecenſi) prope portam Arndalenſem invenit nigram et talcoſam referente Wormio. Here I add, from good information, that ſome years ſince, perſons ſkilled in mining, were by his majeſty's order ſent to Finmark to examine into the truth of a report, that the river, otherwiſe famous for its ſalmon-fiſhery, had a kind of gold-ſand at its bottom like the Niger in Africa; but it was found to be a miſtake, this ſuppoſed gold being only particles of ſulphur, of a good luſtre, but of no value. But about two years ago, a conſiderable quantity of little bits of gold were found near the diſtrict of Salten, in Nordland, among a heap of ſtones near Konſvüg, formerly the palace of a petty prince; this having been magnified by report, orders were given for further ſearch, but theſe were alſo found not to be of the natural produce of that ſpot where they were found, nor of any other in this country, but had been left there, ſome ages ſince, by the inhabitants in thoſe times; for they were little golden images, but made with a more than Gothic ſimplicity, unqueſtionably like the Simulacra aurea Bornholmenſia, treated of by Jacob von Mellen, and Chriſtopher Democritus, three ſuch pieces are in my poſſeſſion; the gold is not the beſt, and the figures are thin laminæ, with golden images on them, one is of about the bigneſs of a finger's joint, another bigger, and the third leſs, the firſt, has on the upperpart, a wheel with a ring in it.

* Hac igitur gaudet prærogativa Hungariæ regnum, quod ſcilicet in tot regionibus, nempe Bohemia, Saxoniis aliiſve ſeptentrionalibus locis argentum ſolummodo, non vero nobili ſocietate iſtuis metalli (de auro ſermo eſt) locupletatur. Secus vero in Hungaria. Danub. Panon. Myſic. Tom. II. p. 107.

tinued. Of this kind are the ſeveral old mines in upper Tellemark, long over-grown with moſs and graſs, but which were formerly wrought in the ſame manner as thoſe of Kongſberg. They are mentioned by Baron Holberg, in his preſent ſtate of Denmark and Norway, and as he is of opinion that they are of very ancient date, he expreſſes ſome ſurprize, that not the leaſt mention is made of them by hiſtorians, ſince by their remains, they appear to have been a work of vaſt charge and extent, perhaps not inferior to any of the ſilver-works in Kongſberg. This complaint of the Baron's is the more excuſeable, as at the firſt publication of his book, the Annales Nic. Kraggei, which had long lain dormant, had not yet ſeen the light, but there he would have ſeen that theſe deſerted mines were of no longer ſtanding than the reign of Chriſtian III. and worked at the expence of that monarch; but the Norway-peaſants raiſing a tumult againſt the Saxon miners, to whoſe command they would not ſubmit, as ſpeaking a foreign tongue, for which ſome were capitally puniſhed; and likewiſe on account of the floods which broke out from the caverns, this work was ſoon deſerted, at a very great loſs. The words of the aforeſaid Nic. Kraggei, concerning this affair, in his Vita Chriſt. III. in Annal. ad A. 1539, p. 204, are as follows: "Coeptum erat ſuperiore anno in Tilemarchia, provincia Norvegiæ, e viſceribus terræ, argenti, cupri et plumbi metalla eruere, ac probata materia, Electori Saxoniæ aliiſque ejus rei peritis, ad quem ſuper hoc negotium aliquoties Scriptum, magna ſpe arceſſitæ ex Miſnia operæ, mandata cura et inſpectio primum ſtigoto Baggoni, inde Antonio Bruſchio, moderatore operarum Johanne Glaſſone, ac immunitates indultæ, prout in fodinis miſnicis tum jura condita, quibus operæ regerentur. Nihilominus tamen illæ ruſticis abutentes inſolentius agebant. Eo magis dolebat miſeris, quod præter ſolitum onera imponerentur, nullo emolumento: Simul quia res erat cum hominibus, quibuſcum nullo linguæ commercio tam brevi familiaritas intercedere potuit, alienati magis animi. Itaque coierunt aliqui paroeciarum ruſtici, ut operantes aut affligerent, aut iis locis expellerent. Sed petulantia ipſorum a præfidibus, quos dixi, refrenata. Ac pauci quidam poſt, mandato regis, extremo ſupplicio affecti, reliquis alia mulcta irrogata, prout quiſque culpæ affinis, aut à noxa immunis reperiebatur,

tur, quum de ſceleris autoribus eſt inquiſitum. Verum, quum initia fodinarum laeta fuerint operæ pretium, diu tamen non admodum factum. Nam in paucis annis rex fatigatus ſumptibus illi inexhauſtis laboribus ceptum diſtruere. Cauſa ferebatur quod emanabat tantum aquæ à cavernis terræ, ut penetrari, quo neceſſe eſſet, ſine ſubmergendi periculo non potuerit.

Afterwards, page 282, ad an. 1545, he ſpeaks of another tumult in oppoſition to the oppreſſive violations of the liberties of the peaſants on account of the mines. It is poſſible that the ſame turbulent ſpirit with which at that time, under the pretence of chriſtian liberty, the peaſants in Germany were animated to take arms againſt their ſuperiors, in their famous ruſtic war, might alſo have ſpread its infection here; though nothing certain can be advanced on this head.

Formerly, likewiſe, a ſilver-mine was worked at Heddemark, which according to the account of A. Berndſen, in the year 1630, yielded a ſtone of fine ſilver, and gave hopes of opening more grooves in that country, but nothing further has been heard of it. Likewiſe in Eger, and Telemark, ſilver-ores have been found producing eight ounces and a half of pure ſilver per quintal. Of other conjectures and reports of ſilver-ore diſcovered in Ryefkelt, Hardanger, Sundfiord, and other northern provinces, there is no ſpeaking poſitively, till they have undergone the examination of perſons verſed in thoſe matters, nothing being more common here than upon a peaſant's growing ſuddenly rich, a whiſper flies about that he has found a rich ore, and conceals it for his own private profit, though this is generally no more than the ſuggeſtion of envy. That near Solein in the manor of Lavigen, on the borders of Sundfiord, there is a river in which is found the ſcoriæ of ſilver-ore, I have unqueſtionable information from the preſent miniſter there, Mr. Thomas Sommer, in a letter of the 16th of October, 1750. There is likewiſe a dubious report concerning ſuch a river in Sundmoer, in the pariſh of Oerſkoug. An exhauſted ſilver-mine in the pariſh of Ranen in the government of Helgeland, has alſo long been talked of, but this was only copper-ore, and ſo poor, as never to requite the charge and labour. However, at the inland extremity of this diſtrict, on the borders of Sweden, is a mine containing both ſilver and lead-ore, and diſcovered by the

Swedes in the laſt century, but ſince, by order of the lord of Aluen, demoliſhed by the Norvegians; not to mention, that from its ſituation it was difficult to be wrought. Likewiſe ſome copper-ore has been found with mixtures of ſilver, as that lately diſcovered at Odal, where, in the groove called Langaaſen, every quintal of ore yields ſixty or ſeventy pounds of copper, and four ounces of ſilver intermixed, but leſs in other parts.

But without dwelling any longer on theſe, I ſhall proceed to give an authentic account of the two rich ſilver-ore works, which are now carrying on, to the vaſt advantage of the ſovereign and community; and theſe are the works of Kongſberg and Jareſberg.

## SECT. IV.

The firſt mine which lies near Sandſwerd in Numedale, four Norway miles from Drammen, is, at preſent, to the beſt of my knowlege, the moſt conſiderable and of the greateſt profit of any in Europe, and in reſpect of pure maſſy-ſilver veins, quite inexhauſtible, whereas the German ſilver-ore is in a great meaſure inviſible, and muſt be extracted from the lead and copper, in which it is concealed. This work began in the year 1623, and was diſcovered in the following manner; two peaſants, by name Jacob, and Chriſtopher Groſwaltd, attending their cattle on thoſe ſteep mountains, which ſeparate Telemark from Numedal, found the firſt ſilver-ore in ſome lapideous fragments fallen from the mountain, and which by way of paſtime they uſed to throw at one another; when they heard a jingling ſound! the metallic ſubſtance it yielded they imagined to be lead, and carrying it home, attemped to melt it into bullets, buttons, and the like, but their fuſion not rightly ſucceeding, they ſold their ſtore to a goldſmith of Tonſberg, who uſed to ſell his goods about the country. He informed the government of it, and the affair being laid before the king, orders were given for a further ſurvey of thoſe parts, which was attended with ſuch ſucceſs, that at a ſmall diſtance from a church which then ſtood there, beſides the rich veins of ſtone, a lump of pure maſſy ſilver of a pound weight was found. Hereupon Chriſtian the fourth, was pleaſed to give his name to the firſt groove, and miners were ſent for from Germany. Theſe were the firſt inhabitants of the new built mine-town of Kongſ-

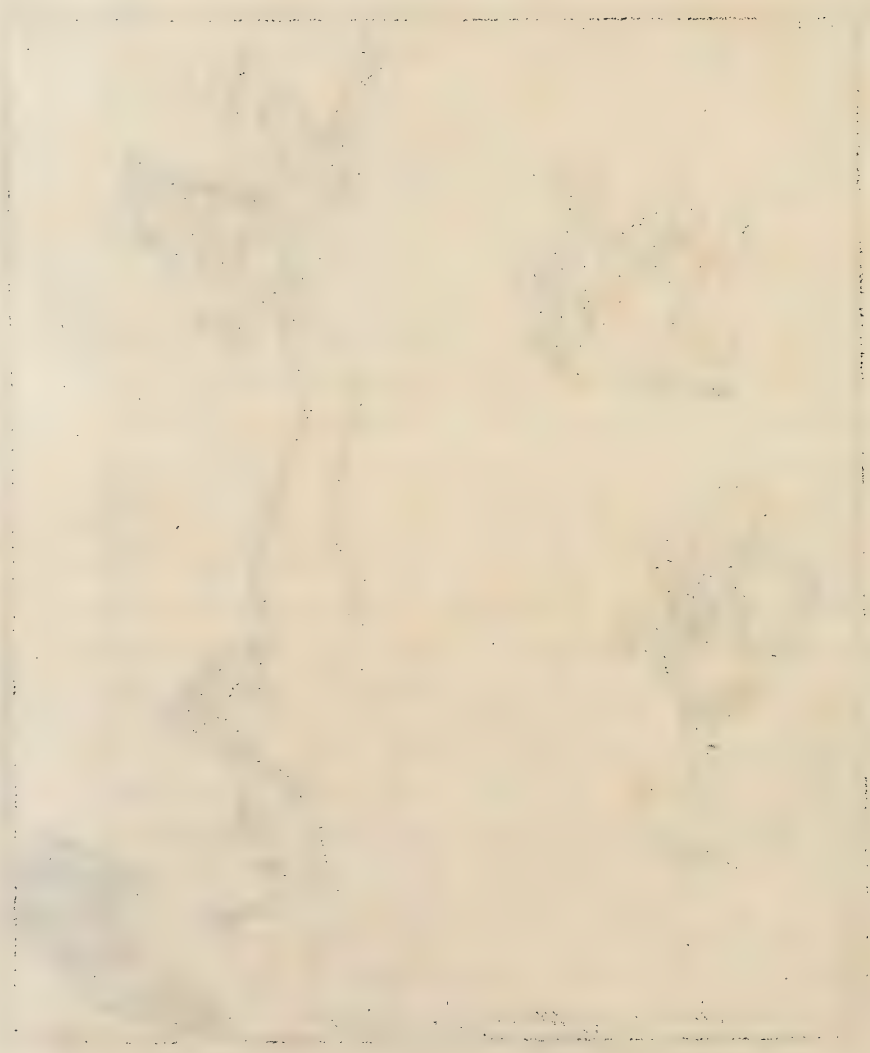
The preſent flouriſhing mine at Kongſberg.

berg, and the anceſtors of the many thouſands at preſent living there, who in proceſs of time mixing with the Norvegians, each nation to this day performs divine ſervice in its own language; but all are under the direction and government of the college of miners. This laſt however, has been ſubject to ſeveral changes and revolutions, the work having been carried on ſometimes by a company of ſharers, and ſometimes, as at preſent, by the king alone. A more particular account of theſe things, as it has no neceſſary relation to my preſent deſign, is to be found in Baron Holberg's preſent ſtate of Denmark and Norway; and inſtead thereof, I ſhall ſubjoin ſome phyſical remarks communicated to me, at my deſire, by perſons of unexceptionable knowlege and judgment.

The firſt method uſed for the diſcovery of the mines, was by the motion of the virgula divinatoria, when it was perpendicular over the ore; but this was ſoon laid aſide, as ſometimes miſleading the ſearchers, and occaſioning a fruitleſs labour. They then followed the way diſcovered by the ſpringing of the rocks, which was naturally pointed out by the ſtrata of the mountains, and the ſtreaks of the veins. A remarkable particular here, is, that whereas in Germany, and Bohemia, the ore-ſtreaks run north and ſouth, here in Norway their direction is eaſt and weſt, except in that of Gotteſgave, which departs from this rule, and takes the courſe of the foreign mines. Though ſome are of a different opinion herein, and affirm, that the fineſt veins of ore here are without any order or regularity, ſo that they cannot properly be ſaid to be of any certain direction. The Kongſberg-ore is likewiſe different from the foreign in largeneſs, formation, and ſolidity, for whereas the ſilver mines in other parts contain ſome, though but a little ſilver, and that looſe and diſperſed, the northern mines, as has been ſaid, produce maſſy lumps or veins, or ſtreaks. In theſe we frequently meet with very curious luſus naturæ, as they are called, of ſeveral figures; a piece of that of Kongſberg, which was in my poſſeſſion, but is now in the royal muſeum, has ſome likeneſs to a ſhip with maſts and ſails; and another which I ſtill have, with the help of a little imagination, repreſents a cock, or ſome ſuch fowl. Theſe ſolid lumps of ſilver, which are ſo far unknown in other parts, that foreigners will believe no ſuch

Veins of ſolid ſilver. See Plate 16.

The Konigsperg Mines of pure Silver



ſuch thing without ocular proof *, being ſoon interrupted and dwindling to nothing, the miner muſt continue to dig through the barren rock, till he has the good fortune to find more, which in one day will reward the labour of a whole month, or even of ſome years, ſo that hope may be ſaid to be the ſpirit of this work, through ſo many interſtices, by which the workman muſt not be diſcouraged, but perſevere in his ſearch in a full perſuaſion, that ore leads to ore. Were it not for theſe barren interſtices all the ſilver-works in Europe together could not come in competition with that of Kongſberg, the immenſe riches of which may be inferred from this, that after the diſcouragements of a long, fruitleſs labour, it ſuddenly exhibits ſeveral thouſand pound weight of ſilver, and thus diſcharges all arrears and embarraſſments, and animates to further proſecution. The labour therefore is never in vain, not even, when it moſt appears ſo, for ſome thouſands of hands, who are employed therein, and of whom a liſt ſhall be given in the ſequel, always earn their daily ſupport. If this were all the profit, which however is very far from being the caſe, yet it would not be inconſiderable, for the acquiſition of the ſilver by which ſo many families are maintained, and which thus circulates all over the country, muſt be eſteemed a great emolument to the public. In proof of the large and rich maſſes of ſilver contained in the mines of Norway, I ſhall only obſerve, that in the royal muſeum at Copenhagen, a piece is preſerved, which the whole world cannot produce an equal, its weight being five hundred and ſixty pound, and its value five thouſand rix dollars †. Be-

* Non in omnibus argenti fodinis hoc invenitur, adeo ut, an tale detur, dubitaſſe videatur Plinius alique veteres. Non occurrit in Rhetia, Norico, Dacia, ſed in quibuſdam Miſenæ fodinis, licet non in omnibus, et in Norvegia in Regio monte frequentiſſime et in magna copia, ut ex inde maſſæ quandoque exſcindantur pondere aliquot centenarum librarum, Ol. Worm. Muſeum, p. 115.

† Of this maſs of Norway-ſilver, Olig. Jacobeus in his Muſeum Regium, page 31, gives the following deſcription, Minera ingens argenti ex fodinis Norvegiæ, pedum quinque et pollicum ſex longitudinem æquat, craſſitiem vero in circumferentia pedum quatuor. Anno 1666. d. 24. Auguſti ex fodina Norv. Regiomontana, quæ novæ ſpei appellatur vulgo, nye Forhaabnings Grube, extracta eſt 560 librarum pondere, et à præfecto fodinæ memoratæ, pretio 5000 imperialium eſtimata. Huic non diſſimilis maſſa, anno 1630, regnante in Dania divo Chriſtiano quarto ex fodina Norvegica quæ benedictio divina vulgo, Seegen Gottes appellatur, eruta eſt, quæ 3272. Imperialium pretio eſtimata; to which I ſhall add, that in the year 1719, in the ſhaft called Saint Andrew, was found a piece of pure ſilver of two hundred and ſeventy nine pound, as was in the year 1727, one of two hundred and forty-five pounds, in the mine called Prince Royal, and in the ſame year another weighing three hundred and four pounds was found in the God's-bleſſing ſhaft, theſe foreign miners who have come into theſe parts, made a difficulty of believing it, till their own eyes convinced them of the truth.

ſides

ſides the eighteen oldeſt grooves, the names whereof are ſpecified by Arnd. Berndſen, more are opened from time to time, but I ſhall here only ſet down thoſe which are worked in the preſent year 1751, which are the following.

Liſt of the ſhafts at preſent worked.

In the firſt Revier.

A ſhaft near Aſchebeck.
A ſhaft near old Stadſmyhr.
Bratte ſhaft.
God's Gift, a mine.
A ſhaft near Juſtice-dale.
Poors mine.
Chriſtian the fourth's mine.
God bleſs king Frederic, a mine.
God's help in diſtreſs, a mine.
Keller, a mine.
Elſe, a mine.
Saxony, a mine.

In the ſecond Revier.

King Frederic the fifth's mine.
Shaft near the above mine.
Prince Royal's mine.
Brunſwick mine.
Juel's mine.
Old God's bleſſing, a mine.
Sophia Magdalena's mine.
Prince Chriſtian's mine.
Frederic the fourth's mine.

In the third Revier.

Samuel's mine.
Sophia Hedewig's mine.
Firſt ſhaft at Samuel's mine.
The ſilver track.
Second ſhaft on Samuel's mine.
Firſt holy Trinity mine.

Second holy Trinity mine.
Duke Ulric's mine.
Old duke Ulric's mine.
Johannes, a mine.
Firſt Concordia mine.
Second Concordia mine.
Glory to God alone, a mine.
The Salutation mine.
The Lady Chriſtiana mine.
Firſt Solomon's mine.
Leadſtreak mine.
Gravel-mine, at Eger.

In the Fourth Revier.

Chriſtian the Sixth's mine.
Queen Sophia Magdalena's mine.
A ſhaft near it.
A ſhaft near Lucky-mine.
Princeſs Louiſa's mine.
Ulrica's mine.
A ſhaft near it.
Mitlere's Winchren.
The new God's bleſſing, a mine.
N° 2. ditto. N° 4, 5, and 9, ditto.
Ramberg ſhaft.
Shaft near old Anna Sophia.

Of theſe mines, the beſt at preſent are the following:

God's help in diſtreſs.
Samuel's mine.
Old God's bleſſing.

Theſe have for many years paſt yielded great quantities of metal, but there are among the reſt many valuable mines, tho' not ſo conſtant in their breakings as theſe. In the fourth Revier, ſeven or eight years ago, the mines of Chriſtian VI. and princeſs Louiſa, have yielded very fine ſilver; but theſe, as of moſt of the mines in the fourth, the richneſs of their breaches has diminiſhed

in the progreſs of the working, yet they are carried on with the uſual diligence, in hopes of their proving better.

It has been found that the ſilver-ore is not, as was at firſt imagined, limited to this ſingle mountain, which lies between the river Jordal and Kongſberg; but extends its veins for ſome miles throughout the adjacent diſtricts, which is proved by the new mines which are from time to time undertaken in ſeveral places, and moſt of them, by the bleſſing of Providence carried on, very proſperouſly. Old God's bleſſing, one of the moſt ancient and rich among all the mines, which, ſometimes, within a week, has yielded ſome hundreds of pounds of rich ore, never fails to ſtrike the beholder with its aſtoniſhing depth, being no leſs than one hundred and eighty perpendicular fathoms, and the circumference at the bottom forms a clear of ſome hundred fathoms. The ſight of ſo many piles of wood burning on all ſides, thirty or forty in number, in this gloomy cavern, and continually fed in order to mollify the ſtone, in the proſecution of the mine, ſeems, according to the common idea, an image of hell, and the ſwarms of miners buſtling about in habits according to their ſeveral occupations, may well paſs for ſo many devils, eſpecially, when as a ſignal that a mine is going to be ſprung in this or that courſe, they roar out, Berg-livet! Berg-livet! Take care of your lives! I ſhall here briefly repeat the words of a gentleman well ſkilled in mining, Mr. Eman. Suedenborg, in the preface of his book called Regnum Subterraneum, where he ſays of theſe Kongſberg ſilver-mines, which are viſited by the travelling German-miners, as a lycæum in their ſcience, to which Europe has not an equal; "Quid Norvegiæ in fodinis Kongſbergenſibus, ubi jam per ſeculum vix niſi argentum nativum et ſemel iterumque etiam aurum, tanquam auræ melioris progenies, in lucem et diem gelidiſſimum pleniſſimo ſæpe cornu prodierat, cujus annuum proventum ab anno 1711, ad 1724. ſiſtere volupe eſt, ut inde miranda naturæ phænomena in regno ſubterraneo exiſtentia luculentius contemplari liceat. Ex illis ſodinis ductæ ſunt argenti multam partem nativi.

The deepeſt mines.

| | | | | | | | Thal. | Imper. |
|---|---|---|---|---|---|---|---|---|
| Anno 1711, | Libræ | 15483 | 12 | ſem. | inpretio | | 172144 | 56 |
| 1712, | —— | 15490 | 10 | ſem. | 3 gr. | —— | 174157 | |
| 1713, | —— | 12630 | 14 | ſem. | 3 gr. | —— | 141246 | 87 |
| 1714, | —— | 12689 | 15 | ſem. | 1 gr. | —— | 148316 | 45⅝ |
| 1715, | —— | 9034 | 10 | ſem. | 2 gr. | —— | 108154 | 73 |
| 1716, | —— | 12744 | 11 | ſem. | 3 gr. | —— | 154194 | 69¾ |
| 1717, | —— | 21793 | 2 | ſem. | 3 gr. | —— | 276428 | 65 |
| 1718, | —— | 19685 | 6 | ſem. | —— | —— | 257149 | 19¾ |
| 1719, | —— | 14824 | | —— | | —— | 193948 | 65½ |
| 1720, | —— | 12760 | 15 | ſem. | 3 gr. | —— | 168992 | 42¾ |
| 1721, | —— | 13671 | 10 | ſem. | 3 gr. | —— | 178181 | 3¾ |
| 1722, | —— | 16884 | 2 | ſem. | —— | —— | 222285 | 32¼ |
| 1723, | —— | 16722 | 8 | ſem. | 3 gr. | —— | 210273 | 7$\frac{5}{16}$ |
| 1724, | —— | 14384 | 10 | ſem. | 4 gr. | —— | 186796 | 5¼ |

A compariſon of theſe ſeveral ſums ſhews the annual produce of theſe works to amount to a tun of gold and a half, and ſometimes three quarters*; and the Almighty has in a ſignal manner been pleaſed, for ſome years paſt, to proſper theſe ſilver-works, ſince they came under the prudent management of Mr. Stuckenbruch, who by his penetrating genius, has greatly improved them by ſeveral mechanical inventions, which, likewiſe to the honour and advantage of the country, have invited great numbers of curious foreigners, who with admiration here behold wonders, both in nature and art, ſuch as probably no other country can parallel.

The number of the officers of all ranks, the daily miners, labourers, and penſioners, excluſive of their children and families, who have their daily ſupport here, according to the eſtabliſhment, amount to near five thouſand perſons.

In the mine of Kongſberg, the following are actually in conſtant work:

| | Men. |
|---|---|
| In the firſt Revier - - - | 650 |
| In the ſecond - - - - | 600 |
| In the third - - - - | 980 |

* From the Vienna article in the news of June 18, 1751, it appears, that, all the ſilver and gold mine-works, in the Imperial hereditary States, are not equal to the ſingle mine-works of Kongſberg, the words are theſe: "Since the commencement of the reign of the empreſs queen, or from the year 1741 to 1751, 1,398364 guilders have been coined at her Imperial majeſty's mints of gold and ſilver, produced by the mines in the Auſtrian hereditary dominions.

In

| | Men. |
|---|---|
| In the fourth - - - - - | 900 |
| Sawyers - - - - - - | 60 |
| In the founderies - - - - - | 40 |
| In the mint - - - - - | 16 |
| Carpenters - - - - - | 80 |
| In the ſpring foreign peaſants are taken into work for wood and coal; and in winter, when day-labour ceaſes, an hundred men are employed in mining, beſides ſixteen men kept in conſtant pay for repairing the flat-boats, and the like, amounting to - - - - - - | 116 |
| In the ſummer, the day-labour commences in June, and continues till the cloſe of November, when the men employed are at leaſt - - - | 200 |
| Diſabled and ſick, receiving penſions from the mine-cheſt - - - - - | 300 |
| Miners widows, likewiſe penſioners - - - | 500 |
| Officers widows - - - - - | 30 |
| Officers on penſion - - - - | 20 |
| Officers actually in ſervice - - - | 50 |
| Iſſuers - - - - - - - | 40 |
| Total | 4582 |

The number of all the inhabitants of the town of Kongſberg, amounts to betwixt ten and eleven thouſand ſouls.

The principal officers are the following:

The governor of the mine.
The comptroller of the mine.
Three aſſiſtants.
A ſecretary.
A ſuperintendant.
A clerk of the mine.
An officer to fix the boundaries.
Four jurats.
Four head-refiners.
Two purveyors.

A clerk of the huts.
A maſter of the huts.
An aſſay-maſter.
A maſter of the mint.
An engraver.
A keeper of the ſaws.
A chief foreſter.
Three under foreſters.
A foreſt-clerk.
A phyſician and ſurgeon.

## SECT. V.

The other Norway ſilver-mine was diſcovered in the year 1726, and begun by the families of Huſmann and Cicignon, and afterwards, in the year 1734, devolved to count Wedel. It lies near Bragnas, and for wood, water, and other neceſſaries, is very conveniently ſituated; and its ore likewiſe is very rich, but without ſuch ſolid veins or maſſes of pure ſilver as thoſe at Kongſberg, the ore, like that of the German-mines, having a large mixture of lead and copper, which, in the phraſe of the miners, muſt be *made good*, and ſeparated by fuſion. This operation has hitherto been inexpreſſibly difficult and laborious, and the proſecution of the work has been greatly obſtructed by the tedious labour, and exceſſive charges occaſioned by the hardneſs of the metal, or rather by the adheſion of the metal, and its intimate conjunction with the ſtone. Whether this ariſes from a large mixture of arſenic and antimony, or from what other cauſe, has been a controverted point, and I muſt refer the deciſion to better judges. The hand-ſtones which I have of this, contain, as I have ſaid, copper, iron, and lead, intermixed with the ſilver, yet the ſilver in ſuch abundance, that when experience ſhall have improved the preſent method of fuſion and ſeparation, and this mine comes to be wrought with more ſkill and attention, I am of opinion it will prove no leſs profitable than that of Kongſberg itſelf. In the mean time the ſilver and lead found here, is ſold to the royal mint at Kongſberg at a ſettled rate. The names of the mines hitherto found, and now wrought at the depth of forty-five fathoms, are upwards of twelve in number. In copper-mines this kingdom has likewiſe been providentially and remarkably diſtinguiſhed, eſpecially in the

The Jarlſberg ſilver-works.

mountain Nordenfield, which moſt abounds in this metal, as Sondenfield doth in ſilver and iron. The excellency of our copper hath recommended it ſo much among foreign nations, that many ſhiploads of it are annually exported, tho' for the moſt part unwrought, which is contrary to the maxim of our neighbours the Swedes.

## SECT. VI.

The copper-works at Roraas.

The firſt, and hitherto the richeſt copper-work in Norway, and ſince that of Falun in Sweden, is ſaid to be near exhauſted; poſſibly the richeſt in all Europe, is that of Roraas, twenty miles N. E. of Drontheim, and diſcovered in 1644, by Laurence Loſſius, refiner at the mine of Quickne, and who at the expence of his father-in-law M. Andrew Olſens, ſuperintendant of Dalerne, and in concurrence with him opened, and forwarded this great undertaking. There are ſome other particulars relating to this work recited in a printed ſermon of Mr. Peter Abildgaard, on occaſion of a jubilee celebrated on the 9th of October 1744, by the inhabitants of Roraas, which is now a conſiderable mine-town, in gratitude for the uninterrupted proſperity of their mine during the courſe of a hundred years; and it is remarkable, that in this jubilee year, a new ſhaft of excellent ſlate was diſcovered not far from the old mine of Storvart, which is one of the oldeſt and beſt courſes. Theſe courſes of the copper-veins, agree in their direction with thoſe of other parts, neither aſcending nor declining, but like other ſtrata, traverſing the mountains horizontally, tho' thinneſt towards their centre, like a lump of dough, which preſſed betwixt two ſtones, is thinneſt where the preſſure lays greateſt. From the nature and diſpoſition of the parts, Mr. Daniel Tilas, in his diſcourſe before the Swediſh Royal Academy of Sciences 1742, borrows a very ingenious argument, and ſhews from ſome other correſpondent inſtances, what I preſume has been already evinced by me, to ſome degree of probability, in the ſecond chapter. He likewiſe applies thoſe inſtances to Dr. Woodward's hypotheſis on the alterations of the terraqueous globe by the deluge. And this entertaining little piece not coming into my hands till after I had diſcuſſed that ſubject, to which it properly belongs, I ſhall here inſert that part of it which ſpeaks of the copper-mines now under con-

conſideration. The paſſage in a free tranſlation runs as follows: "A more than convincing proof that the mountains once were ſoft and fluid, is the horizontal and expanded direction of the copper-veins near Roraas in Norway, eſpecially thoſe in Heſte-field, likewiſe the mines Chriſtianus V. Myr, and Heſteklet. This mountain is of a vaſt breadth, and riſes with a very ſteep acclivity, with ſeveral protuberances on it. On the ſouth end, ſeveral courſes of ore ſpread themſelves eaſt and weſt, the eaſtern being carried on by the mine king Chriſtianus V. and the weſtern by that of Heſteklet; and theſe two mines, in length of time, would certainly meet, ſo as to open a paſſage quite through the mountain, had it not lately been obſerved of the ore-courſes, that the greater the height of the mountain is over them, the more they are compreſſed. They are already ſo near to each other, that the workmen in one can hear the ſtrokes of thoſe in the other. But the mine Chriſtianus V. being advanced to the higheſt part of the mountain, the ore-courſe is already too narrow to be worked, and that of Heſtekler is alſo gradually approaching to the like contraction; a circumſtance which has heretofore ſhewn itſelf on all the mines, that, on coming under an eminence, the ore-courſe beneath has been compreſſed, &c. Beſides, the body of the mountain itſelf, under theſe eminences, ſhews itſelf to be much more compreſſed, and, vice verſa. I ſee no other cauſe to which this can be imputed, than to the primordial fluidity of this ſubſtance, and the ſubſequent compreſſion increaſing from the weight of the ſuperjacent ſtrata." So far Mr. Tilas, wherein he ſeems to predict to poſterity a want of ore in theſe parts; but they who are thoroughly acquainted with the affair, are of opinion that the country near Roraas contains a ſtore for many generations, and that a want of fuel is more to be apprehended, the neighbouring woods being already conſumed, which occaſions the coal to be brought from ſome diſtance; and conſequently raiſes their price. This ſhould incite thoſe, of whom it is the more immediate concern, to promote the growth of young woods, and to reſtrain the keeping of goats, which do ſo much damage among the ſaplings; for how many thouſand laſt of coal, beſide ſtacks of wood, this copper-work requires, may in ſome meaſure be conceived only from this circumſtance, that only the calcination

of

of the ore requires a freſh fire, ſix, ſeven or eight times. That there are in this place, which not very long ſince was a wild deſert, great numbers who now earn a comfortable ſubſiſtence, is obſerved by M. Peter Abildgaard, in his before-mentioned Jubilee ſermon, where he ſays, "It is not much above a hundred years ſince the only inhabitants of theſe parts conſiſted of ſeven or eight families, making about thirty or forty perſons, and theſe led a ſavage life, and derived all their ſupport from hunting; whereas, now, the number of this congregation exceeds two thouſand, excluſive of the neighbouring, which contain many more; and all ſubſiſt by the working of the mine."

To the Roraas copper-work belong ſeveral founderies, which for the conveniency of a ready ſupply of wood are built at a diſtance from each other, and in places, to which in winter, when the moraſſes and rivers are frozen, the ore may be conveniently carried. Particularly at one place called Tolgen, four miles from Roraas, are three founderies, and of the copper for ſome years melted in them, I ſhall here ſet down an account taken from Mr. Schwedenborg.

Regnum ſubterraneum, p. 124.

| Year. | Ship pounds of pure copper. |
|---|---|
| 1698 - - | 700 |
| 1700 - - | 1140 |
| 1702 - - | 975 |
| 1704 - - | 1510 |
| 1706 - - | 1467 |
| 1708 - - | 1460 |
| 1712 - - | 1353 |
| 1718 - - | 933 |
| 1722 - - | 1087 |
| 1723 - - | 1102 |
| 1724 - - | 1128 |

Theſe founderies annually conſume betwixt 12 and 15000 laſts of coals, and 5 or 600 fathoms of wood.

## SECT. VII.

The medal, or Lykken copper-work.

Next to Roraas is the medal or lykken copper-work, four Norway miles and a half from Drontheim. It is ſaid to have been diſcovered in 1654. Its founderies lie near Svarkmæ, and Grudſetter,

ſetter, and according to the ſame writer the produce of them has been as follows;

| Year. | Svarkmæ. Ship-pounds of pure copper. | Grudſetter. Ship-pounds of pure copper. |
|---|---|---|
| 1720 | 722 | 120 |
| 1721 | 694 | 261 |
| 1722 | 566 | 263 |
| 1723 | 478 | 210 |
| 1724 | 401 | 215 |

## SECT. VIII.

The Indſet or Quickne copper-work lies ten Norway miles from Drontheim, and though diſcovered in 1635, was not wrought to any great effect till 1707. Its ore is of eaſier fuſion than the former, and has leſs ſtone in it, but on that account is the more ſaturated with ſulphureous particles. A quintal of the ore yields 12 ſhip-pounds of copper, which require a 100 laſts of coal, and its annual produce is betwixt 3 and 400 ſhip-pounds of metal. The former director, M. Broſtrup Fax, found out a method here, by precipitation, to tranſmute iron into copper; the proceſs of which is thus: Near the caverns lie heaps of marcaſites and ſcoriæ, through which water is made to run into little channels filled with bits of iron laid lengthways one below the other. This vitriolic-water carries with it the copper ſediment, and ſometimes copper itſelf, and permeates through the iron till at length it becomes copper. I have a ſpecimen of this tranſmutation, though ſo far imperfect, that the internal part is ſtill iron, and the ſurface on all ſides copper. Half a year is the term of a complete tranſmutation; but it muſt be carefully attended, particularly with reſpect to the time, for if it ſhould lie a few days beyond the regular period, it would be ſpoilt by the droſs and metal intermixing. The iron ſuffers a diminution in its weight, but this is compenſated in the profits of the tranſmutation. I remember Count Marſilli, in his before-cited work, mentions a practice of this nature at one of the copper-works in Hungary, where the vitriolic-water, running from channel to channel, produces a like effect, and has illuſtrated his account of it with a copper-plate.

The Indſet, or Quickne copper-work.

## SECT. IX.

The Selboe copper-mine.

The Selboe copper-work lies ſix Norway miles eaſtward from Drontheim, and was diſcovered in the year 1712. The ore at firſt had a greater mixture of ſtone and ſulphur than at preſent, for it is now arrived to greater purity. It is carried, the diſtance of three Norway miles, to Mollenaa, where three foundaries are erected. Seven ſhip-pounds and a half of pure copper are extracted from a hundred tun of ore. Which, of the before-mentioned copper-works, the curious M. de la Martimire took a view of, I know not, and much leſs with what truth he could mention a ſilver-mine within two Norway miles of it; this indeed, throws a ſuſpicion upon his whole narrative. However, I ſhall here inſert it from Happel's tranſlation in Mundo mirabili.

Tom. III. L. XIX. c. 2.

"Upon our arrival at Drontheim, we waited on the ſuperintendant-general of the mines, to deliver him our letters, and deſired that our corn might be unloaded with all convenient diſpatch; but his anſwer was, that all his inferior officers being at the mines he muſt ſend a meſſenger thither, before our buſineſs could be tranſacted. Upon this I deſired our captain's leave to go along with the meſſenger, which being readily granted, we ſet out early the next morning on horſeback, and came to Steckby, a large town ſix Norway miles from Drontheim, where we thought it adviſable to ſpend that night, which was coming on ſo early as about three o'clock, for we were to paſs through a large wood, infeſted by wolves, bears, and linxes, which being very ravenous, made it more dangerous to travel in the dark. We were mounted by break of day to continue our journey to the mine, and about duſk reached the founderies, where, according to the cuſtom of the country, we were liberally entertained with great plenty of beer, brandy, and tobacco. It was my good fortune here to meet with an officer, who having attended a Norway nobleman in his travels, ſpoke very good French. I told him, that a curioſity of ſeeing the mines had brought me thither, and that I ſhould take it very kindly, if he would be pleaſed to aſſiſt me in it, which he promiſed I might depend on the very next day, and after cementing our acquaintance with a hearty carouzal, we betook ourſelves to bed. The meſſenger who left

me and returned to Drontheim, having recommended me to one of the mine officers, who the next day propoſed to carry me with him to the mine. My firſt buſineſs the next morning was to go to my new acquaintance, who had prepared a good breakfaſt both for himſelf and me, and the officer, my guide, whom, during our repaſt, he deſired to ſhew me the ſeveral parts of the works. Accordingly we left the foundery, which ſtands upon a high mountain near the entrance of the mine-works, and on the top of which is a crane, worked by two men, each in a wheel. Theſe draw up from the mine large maſſes, ſometimes of ore, ſometimes of earth, as the free-ſtone, and potter's clay is drawn up at Paris. The officer and I having ſeated ourſelves in a wooden veſſel, compacted with iron and cords, were let down into the ſhaft, to the depth of fifty fathoms. Upon reaching the bottom, I could not forbear imagining myſelf in a kind of hell, nothing appearing but diſmal dark caverns, large fires, and the workmen looking like devils, all in black leathern coats, and leathern caps like thoſe our clergy wear in winter, ſloping towards the lower part, and widening upwards to faſten over the noſe to keep out the ſmoak, with aprons of the ſame. The work in theſe mines is various, ſome breaking the ore, others buſy with their inſtruments in ſeeking for copper-veins or water-courſes, which ſometimes ſuddenly break out, as not long ſince was the caſe, and with ſo much violence, that without the greateſt activity in ſtopping it, the whole mine had been under water. The officer who had accompanied me in this deſcent, obſerving me to be ſeized with ſhivering, rung a bell as a ſignal to draw us up again, which was done in as ſhort time as we had been let down. We then returned to the foundery, where my generous interpreter had provided a good dinner ready for us, and after a cheerful meal, he, the officer, and myſelf, ſet out on horſeback to take a view of the ſilver-mine works, at two miles diſtance from thence. Upon our arrival there, we went up to the chief overſeer's houſe, who very jovially bid us welcome in a glaſs of brandy, which he afterwards filled round, and this was ſucceeded by tobacco and beer in plenty. After this regale he conducted us to the foundery, which was about a quarter of a mile from his houſe, and nearly of the ſame conſtruction as a copper-foundery. Here the workmen were all buſy in various

employ-

employments, ſome ſeparating, ſome waſhing, ſome melting, ſome refining, and ſome forging; all for the king's uſe. From the founderies we went to the mine works, which were in an oppoſite mountain, the officer and I went down; but I found no manner of difference betwixt this and the former, the ſhaft, fire, and garb, the method and time of working were entirely the ſame; as to the latter, it was three hours before noon, and three hours after, but in ſummer four. In their leiſure they are full of mirth, dancing to a lyre of their mode, and other inſtruments, I had the pleaſure at the copper-foundery to be a ſpectator of one of their revels. In the winter all work ſtands ſtill, but they receive their daily pay of five Daniſh ſhillings as in ſummer when at work."

The importance of this copper-work may in ſome meaſure be conceived from hence, that beſides the many millions which for theſe hundred years paſt have accrued from them to private perſons, the tenths alone being an annual revenue to the crown of thirty or forty thouſand rixdollars, and on the laſt Swediſh invaſion, a draught of five thouſand effective men was made out of the workmen in theſe mines.

## SECT. X.

Fandal copper-work.

Laſt year a copper-work was opened at Fandal in Gulbranſdale below Dofrefield, and which the proprietors have a proſpect of turning to very good account, but as I have no particular information of it, I ſhall paſs it over with ſaying, that the name of the main groove is Frederic's gift.

## SECT. XI.

The copper-work of Aardale.

The copper-mine of Aardale, in the diſtrict of Sundfiord, in the dioceſe of Bergen, being diſcovered at the beginning of this century, has been wrought firſt by private perſons, and afterwards on the king's account, the ore being eſteemed very fine and good, and not without ſome mixture of gold; which induced king Frederic the fourth, to purchaſe the mine for thirty thouſand rixdollars; but afterwards, by the variation of the ore and other accidents, it has been for a long time ſuſpended; however, purſuant to a propoſal laid before the revenue-chamber, it is ſoon to be ſet on foot again.

About thirty years ago a ſociety undertook the working of a copper-mine found on the iſland of Smolen, not far from the leſſer Foſen, now called Chriſtianſand, but diſſenſions, and other cauſes have put a ſtop to it. On the iſland of Smolen.

On the other hand, in the year 1741, a ſociety undertook a copper-mine at Oedal, nine Norway-miles from Chriſtiania, which turns out to their great advantage, every quintal of ore yielding, beſides ſome ſilver, ſixty or ſeventy pound of copper. Oedal.

## SECT. XII.

Iron, which Pliny juſtly calls, optimum vitæ peſſimumque inſtrumentum, abounds all over Norway, but chiefly in the dioceſe of Chriſtianſand, where the ſpiritus vegetativus, ſeems to have impregnated *, all kinds of earth, according to the frequent obſervations made from chymical analyſes of water, ſtone, and mooriſh earth. Dr. Nichols, in a letter of his, ſays, that, among all the ſeveral ſubſtances of which our earth is compoſed, none is more generally found than iron, this metal being reſident not only in all kind of ſtones, but alſo in loam. This he proves by the colours of loam, and the iron marcaſite, by the facility of vitrifying loam, and by the ſimilitude between vitrified loam, and the iron lamellæ, by the dark red colour, which loam acquires by calcination, and laſtly, by this, that when burnt with a mixture of Of iron in general. Philoſophical tranſactions, Vol. xxxv. N. 402.

* Concerning the vegetation of all metals by means of a vitriolic ſpirit, which, according to the Creator's diſpoſition, emanes in vapours from the center of the earth to its utmoſt extremities, and particularly reſides in the mountains for the gradual growth of new metals, a great deal has been written by thoſe who believe ſuch a vegetation, though, by what I can ſee, experience is not on their ſide; no miner ſaying, that he has ever obſerved any appearance of new metal to have grown in mines after being exhauſted an hundred years or more: But a more deciſive confutation of it is, what I have mentioned concerning the ore-drifts, the copper-mines at Roraas, in the ſame large flat ſtrata, as at the creation, or at the deluge. However, as matter of further reflection for thoſe who may be of another opinion, I ſhall here add, what the very eminent Count Marſilli writes on this ſubject, the rather, as from the price of it, his work is not in every body's hands, in Danub. Panon. Tom. III. p. 117. he ſays, "Metalli hujus (ferri) ex primo illo, juxta noſtram hypotheſin reliquis etiam nobilioribus metallis communi principio, ſeu ſpiritu metallico deducendo videtur, ſub vario tamen reſpectu ſeu gradu maturitatis, juxta majorem minoremve matricum ac ſuccorum ibi occurrentium aptitudinem. And further, p. 129. Attentis obſervationibus, quas hactenus recenſuimus, viſum nobis eſt, poſſe probabiliter ſtatui, communem quendam halitum metallicum ſeu ſpiritum ex penitioribus terræ (veluti ſemen ibi lege conditoris reconditum) ad ſuperficiem uſque elevari, tamque montium partes pervadere, quam ipſas planities, verum tamen congruam ipſius fixationem potius in montibus fieri, ratione peculiaris ſtructuræ lapideæ ac ſecretionis ſuccorum ibi concurrentium ad differentiam ſtructuræ ac poroſitatis terræ componentis planities.

oil, it becomes pure iron. It is certain, however, that iron is not univerſally of equal goodneſs, or equally maleable, and on account of its extreme hardneſs requires an immenſe quantity of wood, and tho' not inferior in real value cannot be attended at ſo low a price as in Sweden: the lower claſs of people there are under a neceſſity of working for ſmall wages, and a poor peaſant, often undertakes a little foundery of his own, being ſure of a quick vent; whereas in Norway, all the iron-ore in general is wrought at a great expence, and the ſeveral branches of it require a very opulent proprietor, or even a ſociety of proprietors. Out of the moor-iron, which is found in large lumps among the moraſſes, the peaſant himſelf makes his domeſtic tools and utenſils *. However next to the timber, iron is one of the moſt profitable products of Norway, ſeveral hundred thouſand quintals being annually exported, partly, and chiefly in bars, partly in caſt iron, as ſtoves, cannon, pots, kettles, and the like; the national profit of which is eſtimated at three or four hundred thouſand rixdollars: Theſe iron works are the following.

## SECT. XIII.

Liſt of the iron-works.

Bareboe, likewiſe called Baaſelands-works, lies two Norway-miles from Arendal; this is one of the oldeſt, and ſtill in a good condition.

Barums-work, like the former, and cloſe to it. Its ore is by Mr. Swedenborg accounted the beſt in Norway.

In Regn. ſubter. p. 169.

Bolvig's-work, not far from ſkeen.

Dikkemarks-work near that of Barum, is at preſent diſcontinued.

Edſvolds-work in Over-rommerige, its founderies and machines are to be ſeen in the above-mentioned place, of Mr. Swedenborg's work, page 165.

Egelands-work in the pariſh of Gierſtadt, is but a little undertaking.

Eidsfos-work in the county of Jarlſberg.

Foſſam-work near ſkeen, is one of the beſt, and famous for the great number of cannon caſt there.

* In the pariſh of Vinia in Waas, is a kind of moor-iron, as hard as ſteel, of which the peaſants make excellent axes, ſcythes, knives, and the like.

Hack-

Hakkedals-work in Hadeland, four Norway miles from Chriſtiania.

Kongſberg-work has for ſome time been intermitted on account of ſaving the coals for the ſilver-mines.

Laurwigens-work belonging to the county of that name, is the largeſt and of the greateſt produce throughout the whole country.

Leſſæ in Gulbrandſdale below Doſrefield, was opened a ſecond time in 1710, Mr. Swedenborg deſcribes it in pag. 168.

Moſſe-work near the town of Moſs.

Neſs-work not far from Laurvigen, and belonging to the ſame proprietor.

Oudals-work in the diſtrict of Solſer; the ore of this is poor.

Vald near Kragerœ.

Ulefos, likewiſe called Haldens-work, one Norway-mile and a half from Skeen. A particular circumſtance of this work is, that the iron-mines run under a lake, ſo that for a quarter of a mile, the roof of the mines has a deep water over it, the motion of which may be plainly heard within the mine.

It remains to be obſerved, that iron was the firſt metal wrought in this country, and many hundred years before the working of the more precious metals was thought of, and by all accounts the oldeſt works are thoſe of Eilefield near Saint Thomas's church, and in Leſſœ and Edſwold; but the moor-iron was certainly the firſt diſcovered. Ol. Wormius ſays, " Tacitus refert, Gotthones coluiſſe ferri fodinas. Agricola eas celebrat, quæ inter ſegnedaliam et oſterdaliam ſunt, ut et in Telemarchia ad tertium à ſeida oppido lapidem eruuntur.

## SECT. XIV.

By all the intelligence I have been able to acquire, tin has not yet been found in this country, but in the county of Jarlſberg, lead is found mixed with the ſilver-ore, as I have before mentioned; this lead is ſaid to have a hardneſs in it, which renders it not ſo fit for uſe in the Kongſberg founderies as could be wiſhed; and therefore it is generally diſpoſed of to the Engliſh. The old grooves near Chriſtiania or Aggerhuus-caſtle, are ſaid to have been worked in ſearch of lead and copper, and not for ſilver-ore, as Agricola pretends. Lead-works.

De Metall. lib. ii. cap. 8.

But Mr. Arnd. Berndſen, in his book on the fruitfulneſs of Denmark, and Norway, page 276, relates, " that in the year 1630, copper and lead-ore were found intermixed at Tellemark; and according to Nicholas Cragius, a hundred years before, and in the ſame country, a like diſcovery was made. I have been informed by credible perſons, that near Foſſand-houſe, in the pariſh of Strand, beſides the iron-ore, ſeveral rich veins of lead have been found. I lately had a ſpecimen of lead-ore ſent me, which, upon fuſion, proved very rich and good. It came from Ryefylke, not far from Stavanger. If the vein, upon farther ſearch, ſhould be found large and anſwerable, it will be found very well worth working. The lead-ore, mixed with ſilver, belonging to the diſtrict of Helgeland, on the borders of Sweden, has already been mentioned.

Cragii Annal. p. 204.

Eger, not far from Kongſberg, alſo affords lead-ore, and of the Jarlſberg kind; and the proprietors of the copper-work of Oudal, in the diſtrict of Soloer, have lately begun to open ſome lead-mines.

## SECT. XV.

Quickſilver.

Of the other minerals, which are commonly denied the appellation of metals, and of ſeveral kinds of foſſils, uſed for dying and painting, ſome intelligent perſons inform me that there are ſome to be found here and there in Norway, but others not at all. Great ſearches have been made after quickſilver, or mercury, but hitherto without ſucceſs, except at one place, where it is matter of great doubt whether it was originally produced there. A few years ago, counſellor Stockfleth, found in a clod of earth near the houſe of Viul, as much quickſilver as would have filled a baſon; but, as after a great deal of laborious digging and ſearching no more could be found, it occurred to ſome, that this mineral was not native there, it being poſſible that the quickſilver of ſeveral looking-glaſſes, deſtroyed in a fire ſome time ſince, and thrown thereabouts, might have run together and coaleſced in this lump of earth. The conjecture of Th. Bartholin, is ſtill more uncertain on the Gramen Oſſifragum, found in this country, which he ſuppoſes to be an indication of lead or quickſilver being contained in the earth where it grows.

In Actis Med. et Philoſ. Hafnienſ. ad A. 1673, vol. ii. p. 127.

## SECT. XVI.

Sulphur is likewiſe to be found among our mines in great plenty, but it is not thought worth melting and depurating, as is done at Dylta in Sweden, the Iceland Vulcano's ejecting whole torrents of ſulphur *, which the company's ſhips carry to Copenhagen, in ſufficient quantities to ſerve all the powder-mills; which is the chief demand for it. Sulphur.

## SECT. XVII.

Norway affords no viſible ſalt-mines; but near Fredericſtadt is a ſaline ſpring, tho' for ſeveral reaſons it is neglected. Whether this ſpring ariſes from the ſea or from any ſubterraneous mine is not clear, though from its diſtance of a Norway-mile from the ſea, it can hardly be ſuppoſed to derive from thence. I have already ſpoke of the ſalt, which in ſeveral places is boiled out of ſea-water, yet ſhall here add the following ſhort account of the royal ſalt-work near Tonſberg, to be found in Mr. Müller's deſcription of Tonſberg, lately publiſhed. Salt. Chap. iii. Page 109.

In the year 1739, his majeſty was pleaſed to order ſalt-works to be erected in the peninſula of Valoe, a Norway-mile and a half from Tonſberg, which in the year 1742, was compleated under the direction of Mr. Van Beuſt of the privy-council. It has two refining-houſes, each two thouſand feet in length, and divided into ſix reſervoirs, to which the water is conveyed out of the ſea by a wheel worked by horſes, and running in channels Of the ſalt-works near Tonſberg.

* Among all the mountains of Norway no volcanoes have hitherto, God be praiſed, been known, though, from the following circumſtances, ſome ſuch dreadful phænomena may in the courſe of time break out. In Hardanger, near Diodne-houſe, in the pariſh of Kinzerwüg, is a mountain about two hundred fathoms in height, the ſummit of which, as old people affirm, a little above a hundred years ago began to ſplit and ſeparate, though then the clift was ſo narrow that an active man could leap acroſs it, but in time it gradually enlaged to nine or ten ells; upon which the owner of the houſes, according to the devotion of this country, made a vow of a yearly offering to Kinzerwüg-church, ſince which the apperture is ſaid to have continued as it was; but on the other hand, that part of the mountain which lies toward the ſouth, has ſunk perpendicularly, and is gradually ſinking; this ſide, as I myſelf have ſeen, is ſix or eight ells lower than the other: whether this be not a ſymptom of a ſubterraneous fire, I will not take upon me poſitively to pronounce. The Turin article, in the public papers of Auguſt 21, 1751, informs us, that the mountain Plainjou, near Paſſi in Savoy, had lately burſt in the like manner, with a very copious evaporation of ſulphur, which diffuſed its ſmell all over the country, and occaſioned the people to expect fiery eruptions, like thoſe of mount Veſuvius.

through wears from one reſervoir into another, till it has attained its proper pungency. The ſalt-pans, or the large kettles in which the water is boiled, yields in two or three days two and twenty tuns of ſalt, large meaſure, the tun being computed at twelve buſhels, and each pan requires every time four or five fathoms of wood. But in ſpring, or the beginning of the ſummer, where, by the melting of the ſnows, the rivers carry a greater quantity of freſh-water into the ſea, which ſomewhat diminiſhes its ſaltneſs, the boiling requires longer time, and conſequently more wood. Mr. Müller accounts this ſalt better than that of Lunenburgal, tho' ſome, poſſibly from conceit or partiality, aſſert the contrary. This ſalt-work has a ſeparate juriſdiction, from which, however, an appeal lies to the minery-court at Kongſberg.

It was imagined that arſenic had been found in the ſilver-mines of Jarlſberg, and to this, among other things, the hardneſs of the ore was attributed, but perſons better verſed in theſe matters, deny any ſuch thing.

## SECT. XVIII.

Vitriol. Vitriol, the inſeparable concomitant of copper and iron, might be had here in great plenty if the preparation of it could be brought to turn to good account. The Norway-company, ſome years ago, begun to eſtabliſh, near Kongſberg, a vitriol-work, which they called the Loſt-Sons; but that, antecedently to this, there had been vitriol-works in Norway, appears from the following words of Ol. Wormius: "In Norvegia ſimile vitriolum elaboratur arte, magis ad cæruleum quam ad viridem tendens colorem, verum non in maſſis, ſed in granulis aſperis et inæqualibus proſtat. Viribus et facultatibus nulli cedit." The Engliſh prepare their vitriol from a kind of yellow-veined pyrites, which, after being expoſed three months to the open air, becomes fit for yielding vitriol. It is hardly a queſtion, whether the like might not alſo be done here?

In Muſ. cap. x. p. 25.

## SECT. XIX.

Allum. Allum, which has ſo near an affinity with the former, and contains it, is found in great plenty under Egeberg, near Chriſtiania, betwixt the ſlate-flakes, and works have alſo been ſet up there, which yield plenty of vitriol as well as Allum; but the latter is not

not eaſily ſeparated from its ſediment, ſo as to be brought to a proper tranſparency, and on this account is ſo much the cheaper*. However, this ſediment makes a fine brown dye, like the well-known Engliſh oker, and ſome ſpots of this kind are found in Moraſſes; this, when carefully taken up, ſo as to be clear of ſand, is found fit for painters. I myſelf accidentally alighted upon ſuch a kind of brown oker in the pariſh of Sund in theſe parts; and the iſland of Carmen is alſo ſaid to produce the like; but in the pariſh of Quælfiorden in Nordland, it is ſold at a rix-dollar the tun, and uſed for painting houſes. Ol. Wormius, in his Muſ. cap. III. p. 4. makes ſome mention of two kinds of red earth in Ferro, which are of uſe in painting.

A brown dye made of it.

## SECT. XX.

Cinnabar, or Minium-nativum, by all that I can learn, has not yet been found here, but ſeveral places produce very good ockra, or oker, which belongs to the iron ſpecies, or is a kind of iron-ruſt. The ſamples in my poſſeſſion are of Sulen on Sundmoer, Qualœ in Ryefylke, and from Gedderen. Out of the gates of Chriſtiania, near the place of execution, a vein of very good oker runs along the ſide of the declivity of the mountain.

## SECT. XXI.

It may be preſumed from the copper-mines, that by a diligent ſearch, rightly directed, a blue colour, like the ultramarine, or ſome ſuch, might be found, but the country near Wardehuus in Finland, on the borders of Ruſſia, produces a foſſile of a fine ſky-colour, of which a gentleman lately brought a ſpecimen, by which it appears very well to deſerve a further inſpection, the connoiſſeurs being unanimous in their high eſtimation of it.

A blue colour.

Near the before-mentioned houſe of Viul in Ringerige, is found a very black ſhining fine loam, and ſo fine that it follows the pencil with the ſmoothneſs of ſoap, and may be ſtiled the Norway Indian-ink †. Near Stavenger, as alſo at a greater diſtance from

A black colour.

* In ſome places urine is made uſe of for precipitating the ſediment, which hinders the allum from attaining its genuine clearneſs: whether this proceſs has been introduced here I know not.

† I have been lately informed by Mr. Gabr. Heibeg, ſuperintendant at Nordfiord, and paſtor at Gloppen, that near the houſes of Ryg and Eide, if not in other places, a kind

from the town, is dug a kind of black colour, which, in appearance, nearly reſembles dried coals, and by ſome has been introduced for painting.

A fragrant white loan.

Near Aalgaard in the pariſh of Gieſdal, in the above-mentioned province, in the bottom of a little freſh ſpring, is found a kind of white loam, like Terra-ſigillata, and alſo very ductile; but the moſt remarkable property is, its agreeable ſmell like that of muſk.

Terra antiſcorbutica.

In the Epiſtolæ Ol. Wormii, particularly in the ſecond part 717, in a letter to T. Bartholin, mention is made of a kind of mineral-earth beneficial againſt the ſcurvey, and found near Bergen; but the particular place is not ſpecified, and all of whom I have enquired know nothing of it; which ſhews the utility of placing in a permanent and conſpicuous light what minute diſcoveries are gradually made in any part of natural philoſophy. The words of this learned perſon, in that place, are theſe: "Terra illa antiſcorbutica, cujus mentionem facit catalogus, prope Bergas in Norvegia reperitur; eam mihi attulit Fabricius Medicus Regius, qui ait, ejus civitatis---Poliatrum, non ſine ſucceſſu ad ſudores in ſcorbuto movendos ea uti, drachma una in aqua appropriata: cum effoditur, impura valde eſt, radiculis et ſabulo repleta: munda lentorem et pinguedinem nullam habet, ſed formam pulveris refert, colore Turpethi-mineralis, ex mercurio confecti."

a kind of black earth is found, of which the peaſants make a very good dye for their ſtuffs, which ſhews that it is likewiſe proper for painting, and might be uſed inſtead of lamp-black.

*End of the* FIRST PART.

THE

# NATURAL HISTORY

OF

# NORWAY:

CONTAINING

A particular and accurate Account of the Temperature of the Air, the different Soils, Waters, Vegetables, Metals, Minerals, Stones, Beaſts, Birds, and Fiſhes; together with the Diſpoſitions, Cuſtoms, and Manner of Living of the Inhabitants: Interſperſed with Phyſiological Notes from eminent Writers, and Tranſactions of Academies.

## PART II.

Tranſlated from the DANISH ORIGINAL of the


## Right Revd. ERICH PONTOPPIDAN,

Biſhop of BERGEN in NORWAY, and Member of the Royal Academy of Sciences at COPENHAGEN.


Illuſtrated with COPPER PLATES, and a General Map of NORWAY.


*LONDON:*

Printed for A. LINDE, Bookſeller to her ROYAL HIGHNESS the Princeſs Dowager of WALES, in Catherine-Street in the Strand.

M.DCC.LV.

# The AUTHOR'S PREFACE.

## TO THE

## SECOND PART.

LAST year, when I publiſhed the Firſt Part of the Natural Hiſtory of Norway *, concerning the climate, the air, and the inanimate and vegetative productions of that country, I purpoſed that the Second Part, which treats of Animals, ſhould, by all means, go along with it: but unforeſeen accidents prevented my intention: particularly a dreadful fire, which conſumed a great part of this city, in Auguſt, 1751. My houſe was in imminent danger at the ſame time, of being involved in this calamity, with all my manuſcripts, &c. but, by the mercy of God, the conflagration did not reach ſo far.

This accident, which might have prevented me from ever compleating this work, has made me leſs ſcrupulous in publiſhing this and other manuſcripts, in collecting and compiling of which I had taken ſo much pains; tho' they might not be ſo accurate and correct as I could have wiſhed.

'Tis true, the poet ſays,

——Nonum premantur in annum.

But it ſeems to me more reaſonable that every member of the republick of letters ſhould contribute, as far as lies in his power,

* The Author publiſhed this work in two volumes Quarto; the firſt was printed in 1752, but the ſecond was not committed to the preſs till the year following, for the reaſons mentioned in the preface.

to

to the improvement of the world, rather than let his works lie uſeleſs, and perhaps be deſtroy'd at laſt by ſome ſiniſter accident.

The Firſt Part of this preſent work has had the happineſs to receive the approbation of the public, even to a greater degree than I think it deſerves: but whether the Second Part will meet with the ſame favour and indulgence, time will diſcover.

However, it has been my intention to render this part as inſtructive and entertaining as the former; and I preſume it is more worthy of our notice, as the ſubject, namely, the animal creation, is of more importance than the inanimate and vegetative.

In the firſt ſeven chapters I have treated of Quadrupeds, Snakes, Inſects, Birds, and Fiſhes, eſpecially thoſe that are peculiar to Norway. I flatter myſelf that thoſe who can take a pleaſure in contemplating the admirable œconomy and contrivance of the great Creator with regard to the brute creation, will find ſo many glaring inſtances of his conſummate wiſdom, paternal care, and almighty power, that he will be ready to ſay, with the wiſe ſon of Sirach, "Great is the Lord that made it." Eccluſ. viii. 5.

The eighth chapter, which treats of the Norvegian Sea-monſters, or thoſe Animals of enormous ſize and uncommon form, which are ſometimes ſeen in the ocean, may contribute as much to this good end as any of the preceding.

I have endeavoured as much as poſſible to avoid the imputation of being over-credulous, and, upon that account, often decline giving my opinion of ſome relations, the credit of which I have no reaſon to doubt. I mention this, becauſe I foreſee that when ſome readers come to read the contents of the eighth chapter, concerning the Mer-maid, the great Sea-ſnake, of ſeveral hundred feet long, and the Krake, whoſe uncommon ſize ſeems to exceed belief, they may ſuſpect me of too much credulity. If it ſhould ſo happen, I am content patiently to ſubmit to their cenſure, till they have read the chapter through, and then I flatter myſelf that I ſhall have no need of an apology.

Since

Since the microſcope has been brought to ſuch a degree of perfection, that not only the minuteſt animals, but even thoſe which before entirely eſcaped our ſight, are now diſcovered, and become the ſubject of our examination; what a new ſcene of things is preſented to our view, and how vaſt the extent of Nature's empire *! Great diſcoveries in this way might be made in Norway. If there was but a SWAMMERDAM or a REAUMUR amongſt us, provided with the beſt glaſſes, and ſufficient time and opportunity.

If we turn our eyes to the other extreme, how amazingly large are ſome of the animal ſpecies! The largeſt of theſe are in a manner peculiar to the Northern Ocean, and the contents of the eighth chapter are ſo much the more remarkable, as the world has ſtood ſo long, that the moſt formidable and bulky of its inhabitants have been hardly known to any of the human race, excepting a few Norvegian fiſhermen *.

However, thoſe creatures are very well known to them; and if the many unqueſtionable witneſſes, whom I have ſtrictly examined with regard to this affair, are not to be credited, then we muſt ſet aſide almoſt all human teſtimony.

If my account of theſe extraordinary Sea-animals ſhould not diſpleaſe the philoſophers of the preſent age, I willingly ſubmit my thoughts, as far as they are only my own, to their judgement; whoſe corrections and obſervations tending to the amendment of this work by a new edition, or by tranſlations into other languages, will be always agreeable to me, and the favour will be received with gratitude.

* What can we think of the Animalcule, which De Liſle, in the Hiſtoire de l'Academie Royale, ad Ann. 1711, p. 18, ſays he ſaw through a microſcope, which, in the ſpace of a ſecond of time, or one pulſation of the artery, advanced forwards three inches, taking 540 ſteps. But when we ſuppoſe that every living creature, the leaſt as well as the greateſt, is a hydraulic and pneumatic machine, compoſed of various parts, for various purpoſes, it raiſes our admiration of the works of the all-wiſe Creator ſtill higher.

* Veniet tempus, quo ipſa quæ nunc latent, dies extrahet, & longioris ævi diligentia. Ad inquiſitionem tantorum ætas non una ſufficit. Veniet tempus, quo poſteri noſtri tam aperta nos neſciviſſe mirabuntur. Seneca.

The other claſſes of Sea-animals, and various kinds of Fiſhes, might perhaps have been ſomething more compleat in this work; but I have compared it with more accurate and particular accounts than I have been able with certainty to give, from my own, or my correſpondents experience. However, I have been very exact and careful in obſerving thoſe limits; and what extends beyond them I don't affirm for a certainty. Of Birds and Quadrupeds there are found here alſo ſuch ſorts, as in other European countries are little, or hardly known; and therefore I have been more prolix in the deſcription of them. As for the account of the rational inhabitants of Norway, I did not at firſt intend to touch upon it; but, upon further conſideration, I found nothing in it that was inconſiſtent with the plan of a Natural Hiſtory. For this reaſon I have, in the two laſt chapters, collected as many particulars, as might be ſufficient to give the reader ſome idea of the genius and qualities of the Norvegian nation.

I have one thing to obſerve in this place with regard to a literary article mentioned in my preface to the firſt part of this work: I there reckoned the antient treatiſe, called Speculum Regale, amongſt the books that are loſt, and lamented the want of intelligence that might have been collected from it; but I have been ſince informed, with the greateſt pleaſure, to the contrary, in a letter from the honourable Mr. Luxdorph, councellor of ſtate, dated the 20th of January laſt. I find likewiſe, (tho' too late) that a copy of that antient manuſcript is to be found in the univerſity-library at Copenhagen, among many other manuſcripts given to the univerſity by the late profeſſor Arnas Magnæus; a catalogue of whoſe donations deſerves to be printed, at leaſt, for the information of foreigners and others.

I am further informed in that learned gentleman's letter, that the old notion of the Speculum Regale being written by the wiſe and valiant king Sverre, or at leaſt by his order, and conſequently in his time, is entirely without foundation: for Mr. Luxdorph obſerves that it was written about the latter end of

of the thirteenth, or beginning of the fourteenth century. The author calls himſelf one of the firſt in rank at the king of Norway's court, and informs us that he lived in Helgeland, in the dioceſe of Tronheim. This book is written in the manner of a dialogue betwixt a father and ſon, containing, beſides many good rules, both political and civil, ſeveral obſervations in natural philoſophy, relating to the Northern countries; but not ſo much of Norway in particular, as of Ireland, Iceland, and Greenland.

I have nothing farther to obſerve; but ſhall conclude with this ardent wiſh, 'That the eyes of the Lord, which behold 'all the nations upon earth, may always look favourably upon 'this country and people, both in all ſpiritual and temporal 'affairs:' "of him, and through him, and to him are all things: "To him be all honour and glory for evermore." Amen!

Bergen, April
24, 1753.

E. P.

THE

THE

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THE

# THE NATURAL HISTORY OF *NORWAY*.

## PART II.

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### CHAPTER I.

### Of Four-footed Beaſts, or Quadrupedes.

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### SECT. I.

THE four elements, and the inanimate creatures of Norway, have been deſcribed in the firſt part of this Natural Hiſtory: I now come to the deſcription of thoſe endued with animal life; the quadrupedes, reptiles and inſects, birds, fiſhes; and to the conſideration alſo of the human ſpecies. Speaking of quadrupedes (or four-footed beaſts) I ſhall firſt deſcribe the tame, and thoſe deſtin'd for the ſervice of mankind: among theſe firſt is to be conſidered the horſe *.



* I obſerve, in claſſing the beaſts, the rule which Monſieur Buffon, in his Hiſt. Nat. T. 1. Diſc. 1. p. 33. calls the moſt natural. He founds it upon the ſervice mankind have

The Norway horſes are not uncommon in Denmark, for they are carried thither, where they are admired for their neat and elegant make, and their ſtrength; they are generally ſmall, but well-proportioned, plump and round; the largeſt and beſt are from Guldbranſdal, Surendal and Larendal; the peaſants breed them, for I never heard there was one ſtud here. Their colour is generally a deep bay, with black manes and tails; and a black, brown, grey, or lightiſh mouſe-colour ſtreak along the back; but black is ſeldom ſeen; in fifty hardly one. They are kept on poor and ſcanty food, but are in as good condition as others that live better. A peaſant's horſe hardly ever taſtes corn, yet, tho' they live on nothing but hay, they are ſpirited and ſwift.

Hormod Torf remarks in his Hiſt. Norv. p. 4. lib. 8. cap. 3. that Anno 1302, a man, whoſe name was Augmund Hugleickſon, and who was afterwards hanged at Nord Næſs near Bergen, was the firſt who gave his horſes oats in this country, whence he had the nick-name of Horſe-Corn, Quod in Norvegia primus equos avena paverit.

The horſes here are not ſubject to ſo many diſeaſes as in moſt other countries; and in particular the ſtaggers, which they ſeldom have naturally, tho' ſome get it by extreme labour and old age. It is not uſual here, as in moſt other places, to geld horſes; for which reaſon they are full of ſpirit and ſtrength, and are preferable to geldings. But as ſtone-horſes often are vicious, his excellence the ſtadtholder Guldenloue, in his time, ordered that moſt of the horſes ſhould be gelded; that there ſhould be only two ſtone-horſes in each village. This made as much miſchief among the peaſants, as was done before by the horſes; for the commonality do not love to have new cuſtoms introduced; and if they do come amongſt them, they muſt get in very gradually. Theſe orders of the ſtadtholder were executed in but very few towns, and are now quite neglected; it was, however, a well-grounded law, as may be obſerved by this: in the fields and cloſes, for two miles (ten Engliſh miles) about Bergen, according to an antient cuſtom, no peaſant dare keep a

have of them, firſt naming horſes and oxen. According to Aldrovand's opinion, theſe have the general name of Jumenta a juvando. This rule ſhould be obſerved in human ſociety; the moſt ſerviceable member ſhould have the preference. Hr. Jac. Theod. Klein, in his lately publiſhed Diſpoſitio Quadruped. p. 33. is not ſatisfied with Monſ. Buffon's method, but claſſes quadrupedes rather according to their parts; and agrees in that with H. C. Linnæus in his Fauna Suecica, who, in that reſpect, ridicules Buffon rather too ſeverely. Jo. Jac. Schmidt, in his Phiſico Biblico, p. 424, & ſeq. treats largely on the diſtinctions, preference and pre-eminence of beaſts.

mare;

mare; ſo that there are nothing uſed but ſtone-horſes. The reaſon is, that there are no coach-roads fit for horſes to draw in yoked; but all that comes to town by land, is brought in pack'd upon the horſes back, and the peaſants drive two, three, or four at a time before them, as in other places they do aſſes. Were theſe loaded horſes to meet with mares, there would be frequently miſchief; as it is managed, the horſe-man muſt take great care, and ſit faſt in the ſaddle, for when theſe horſes meet in the narrow roads, they ſeldom paſs without a ſignal of animoſity.

As they do in the weſt of *England*, where they have no coach-roads.

The Norway horſes are better for riding than drawing; their walk is eaſy; they go dancing along, and they are always full of ſpirit; they are very ſure-footed, a circumſtance highly neceſſary in theſe bad roads. The fine Daniſh horſes could not go in them, without hazarding their own lives and their Riders.

When they go up and down a ſteep cliff on ſtones like ſteps, they firſt tread gently with one foot, to try if the ſtone they touch is faſt; and in this they muſt be left to their own management, or the beſt rider that is will run the riſque of his neck: when they are to go down a very ſteep and ſlippery place, they, in a ſurpriſing manner, draw their hind legs together under them and ſlide down.

They ſhow a great deal of courage when they fight with the wolves and bears, which they are oft obliged to do, particularly the latter; for when the horſe perceives any of them near, and has a mare or gelding with him, he puts the weaker behind him, and attacks his antagoniſt with his fore-legs, which he uſes like drumſticks to ſtrike withal; and comes off uſually the conqueror.

Many of the people of faſhion would not believe this, till ſtadtholder Wibe, in king Frederic the fourth's preſence, made the experiment, with one of his coach-horſes, at Fredericſberg. This creature fell upon a bear let looſe againſt him, and laid him preſently dead: but ſometimes the bear, who has double ſtrength, gets the advantage, and eſpecially if the horſe happens to turn about to kick with his hind-legs. If he attempts this he is ruined; for the bear inſtantly leaps upon him, and fixes himſelf on his back: in this caſe he gallops off with his angry rider, till by loſs of blood he drops down.

## SECT. II.

## SECT. II.

The Norway oxen and cows are in general of a yellow colour, as the horſes; they are ſmall, but like the Daniſh in their make. Mr. John Anderſon, in his Deſcription of Iſland xxvii. aſcribes this littleneſs to the extreme cold and denſe air, in thoſe countries towards the north pole; which he thinks, altho' it does not hinder the fiſh from growing to the largeſt ſize, may hinder the parts of land animals from dilating themſelves, as in milder and lighter air. For this reaſon, in the hotteſt climates are found the largeſt beaſts; as elephants, rhinoceros, dromedaries, camels, &c. but I don't know that this reaſon has any force here: of this I ſhall not determine, but of a certainty it is not applicable to all beaſts; for the elk and ſtag, I believe, are hardly any where larger. Not to mention the people, who, as to the principles of animal life, would certainly be ſubject to the ſame accidents. In that it does not hold, for the men of Norway yield to thoſe of no other nation for bodily growth and ſtrength of limbs *. On the other hand we will agree with the curious author in his Account of Greenland §. xxxvi. wherein he obſerves, on this head, the peculiar providence of the Creator: for in the coldeſt climates the beaſts are generally fuller of blood, and their fat grows on the outer parts, that is, betwixt the fleſh and the ſkin, for their greater warmth. On this head I ſhall add an obſervation of my own, confirmed by others that I have conſulted about it; which is, that the white membrane, which lies acroſs the loins of our cattle, is much thicker and larger than elſewhere; and, without doubt, this is intended to keep in the natural heat.

In our Norway cows is found very little tallow; and the moſt of that which is tranſported is goats, as ſhall be ſhewn hereafter. The meat, after good graſing, towards the winter is ſufficiently fat, and very tender and delicate; fine grained, juicy, and

* If what this author advances had foundation in nature, then the beaſts in the pariſh or diſtrict of Tronheim, which is much farther north, ſhould be ſmaller than in the pariſh of Bergen; but this is found quite the contrary, for they viſibly exceed them, the tame, as well as the wild; and alſo the birds. On the many ſmall iſlands on the weſtern coaſt of Norway, I muſt obſerve there are yearly bred many oxen much larger than thoſe on the continent, and ſome almoſt as big as the Daniſh; but perhaps that may proceed from the very fine paſture they have, and the liberty they enjoy; for they run wild there, and when they want them againſt the ſeaſon of ſlaughtering, they either ſhoot them, or lay ſnares to catch them. Theſe cattle are commonly joined by, what they call Udgangſvadre, or Rams, (which are kept there as guides to the other cattle that are put there) they become old and ſtrong on the ſpot, and generally herd with the cattle; and in the winter they help them to ſcrape away the ſnow and clear the graſs: but as they have the command, they don't ſuffer the other cattle to feed, till they have pretty well ſatisfied themſelves.

well-

well-taſted *. As for milk and butter, our cows afford but little, according to their ſize, about a gallon of milk a day at moſt, but this is very good; yet that depends upon their graſing; and, as I have before taken notice, we have as good butter as any where, excepting in Marſk Landeme. The peaſant prepares for himſelf milk, butter and cheeſe, in different quantities, according to his palate and fancy; and, particularly in ſummer, his common drink is whey. As the cows each give a little, they keep ſo many the more, and turn them out in the ſummer ſeveral miles diſtant, to places called ſæters, on the high rocks; where they keep a woman-ſervant in a hut to watch them. In the ſpring, when they are firſt turn'd out, they make a large fire, which they call Boe Ild, in the fields, to which the cattle, from their farm-yard, all run, particularly in the cold nights, and lay themſelves round about it; this uſes them to keep together, and to look for the houſe when they are to be milked. The ſmall ſpot of ground that theſe peaſants have, is not ſufficient for winter provender for their ſtock of cattle; to ſupply which, in ſummer they cut off for them the boughs of ſeveral trees, by cart-loads, and dry them tied up in bundles; and, in the ſpring, they throw them the leaves and young branches, ſprouts and boughs.

In the Northland Manor, and ſome towns in this dioceſe, the Stranſiddere, which are thoſe ſettled on the coaſt, who have large fiſheries, for want of other food or provender, mix cods heads, and other fiſhes bones together, which the cows eat with a good appetite; but the milk is not good, for it has a very fiſhy ſmell †. It is not only fiſh bones the cows here eat, but likewiſe the bones of their own ſpecies, which they ſwallow greedily, and gnaw them with their teeth as the dogs would. This ſingular circumſtance was doubted, and the privy-counſellor Van Oſten, who has been governor here at Bergen, took with him a Norway cow to court, and gave proof of the fact, to the aſtoniſhment of the beholders. Nay, the eating of bones is a cure for the cows of this country, when they have broke their legs; eating alſo the herb which Th. Bartholin calls Gramen Oſſifragum Norv and in the deſcription of which I have before ſaid more on this ſubject.

Stranſiddere, are a ſort of people that live by fiſhing; they are not farmers, nor are they free of any city.

* The Engliſh, who are ſo partial to their own country, that they will hardly allow any other to have the advantage in theſe reſpects, when they come to Norway, muſt allow our veal is not inferior to theirs.

† The Arabians at Balſora, and Indians in the fields of Gomron, alſo feed their cows with heads of fiſhes; tho' I don't ſay our Norway people have learnt it of them. J. Bapt. Taverner takes notice in his Perſian Travels, cap. viii. p. 93, and cap. xxiii. p. 287. Neceſſitas maxima magiſtra is not ſeldom alſo Communis magiſtra gentium remotiſſimarum.

The peaſants uſually give the cows daily a little ſalt, which faſtens the teeth, and whets the ſtomach *; and ſometimes a ſalt herring, which they apprehend is a treat to the cow, as well as to an human creature. But on the contrary, a ſalt mackarel, tho' it be his food, is found pernicious to them, as well as the pickle.

## SECT. III

Sheep are called here Smaler †, and in ſome places Souer; they differ, ſo far as I obſerve, but little from the Daniſh; I therefore ſhall not detain myſelf with a deſcription of them. There are ſome brought over from England; this has been done with a view of propagating the Engliſh Kind, but they degenerate here, and in the third or fourth generation they are but very little preferable to our own. Mr. Peter Daſs acquaints us, in his Poetical Deſcription of Nordland's Amt. p. 106, that there are found in the iſlands quantities of wild ſheep, which never go into any houſe, or have any thing to do with mankind, excepting when they are annually catched to be ſheared ||. He confirms alſo what has been ſaid about their fat; that it is found on the external parts, and that it covers the fleſh like a warm cuſhion.

In regard to the ſheep in Farſe, according to Hr. Lucas Debe's Account, p. 116, ſtanding in the winter under the ſnow, and eating one anorher's wool, which is perceived above the ſnow by the warm damp that ariſes, I ſhall not affirm it on my own knowledge, tho' it may be believed from many analogous accidents; and is ſtrengthened by Mr. Anderſon, L. C. §. xxix. who ſpeaks of a Topho Ovino Norvagico, or a hair-ball, which is found in the ſtomach of the Norway ſheep. It is to be obſerved, that the ſame kind of ball is alſo found in cows, and

* As for the pernicious epidemic diſeaſe, which has raged ſeveral years thro' moſt parts of Europe, Norway has, thro' the mercy of the Almighty, been hitherto free from it; but that the ſame, or ſome other has been known here (when it pleaſed the Almighty to puniſh) is to be ſeen in Olaus Wormius's Account in his Muſeum, p. 333, where it ſtands, that Anno 1642, died alone in Nordefiord, which has five pariſhes, upwards of 4000 oxen and cows of the peaſants, excluſive of the clergy's and others.

† According to D. Nic. Horrebow's account, this is the name of a ſhepherd in Iſland; but here we call the ſheep So.

|| Concerning the before-named Udgangſvadre, or the rams, they take their food, winter and ſummer, on the Nordland Iſlands; and I am aſſured by one of my correſpondents, that they grow much larger and fatter than any other, and that their wool is cleaner and better; ſo that the owner has the greateſt profit or advantage of them; and that, by a natural inſtinct, they take up their quarters at that corner of the land, from whence the wind will come the next day; which ſignal or mark the ſea-faring people find to be invariably true.

is

is compoſed of the hair ſwallowed, which ſticks to the tongue, when theſe creatures lick one another. Of ſheep's dung, and the middle bark of Elder boiled in cream, the Norway peaſant prepares a good ſalve for burns: if the ſore be full of matter or water, then they ſtrew the dried dung powdered upon it, which helps greatly. Goats and kids are hurtful animals to the woods and trees; the country people here are very fond of, and keep too many of them*; for they, before all other creatures, labour to get at food and nouriſhment, climbing the rocks, and, to men, inacceſſible places in the mountains and cliffs, and ſteep heights. Wherever graſs is to be found they will get at it, where no other graſs-feeding creature can; but ſometimes they get themſelves into ſuch a dangerous ſituation, that they can neither go backwards or forwards, up or down. In this caſe the goat runs to the very edge, and there ſtands braying; the Norway peaſant then, to ſave his goat, ventures himſelf often in ſuch a manner, as another man would not for the beſt friend; they ſuffer themſelves to be let down by a rope of a hundred fathom or more, as I have already mentioned in another place.

The beſt goats are in Nordland and in Sundmoar; they run wild in many places, winter and ſummer, in the fields, till they are ten or twelve years old; and when the peaſant, their owner, is to catch them, he muſt either do it by ſome ſnare, or ſhoot them†. They are ſo bold, that if a wolf comes toward them alone they wont go out of his way; and if they have dogs with them, they will reſiſt a whole herd. They frequently attack ſerpents; and when they are bit by them, the owner warms their own milk, and waſhes the ſore with it: they commonly revenge themſelves ſeverely upon the ſerpent who bites them; for they eat him up, tho' they plague themſelves a great while

* From Bergen alone there is ſhipp'd off annually 70 or 80,000 raw goats ſkins, excluſive of ſeveral thouſand which are dreſſed here for Suffian, Corduan, and Ruſſia leather, ſent hence very good; which manufacture might here be greatly encouraged, by dreſſing all the ſkins here before they are ſent out.

† Near Roſtad, in the manor of Lattens, there is a flat and naked field, the ſoil almoſt white, with grey ſtripes. The earth here is found, by experience, to have ſomewhat in it of a poiſonous quality, fatal to goats and kids, and to them alone. Other creatures may ſafely go over it, but theſe muſt not ſet a foot upon it; ſo ſoon as they do they drop down, ſtretch out their legs, and their tongue hangs out of their mouth; and they die if they have not inſtant help. Neither graſs or any green thing grows upon it; the very ſtones have that quality. The Conſiſtorial Aſſeſſor Friſes aſſures us, that in the midſt of winter it has not that effect; in autumn it is the ſtrongeſt. I don't know whether this may be aſcribed to a damp, as the famous Grotto del Cane, near the lake Agnano in the Neapolitan dominions, according to Miſſon, and others; who ſay, that a dog no ſooner ſteps in than he dies, if not immediately dragged out and thrown into that lake.

before

before they can get him down. After this, they don't find themſelves well for ſeveral days; but I don't hear they ever die.

The peaſants dry the goats blood, and diſſolve it by boiling it in oil, which they hold to be a good remedy for the Lumbago.

## SECT. IV.

There are hogs in Norway, both of the long and ſhort-bodied kind, but few, ſince they cannot, like the reſt of the peaſant's ſtock, be drove to a diſtance to ſæters, but muſt be kept near the houſe, where their food comes too dear; particularly in thoſe grounds where there are no oak or fir-woods for them to feed on the fruits; for which reaſon a great deal of bacon is brought hither from Denmark.

Leaves and boughs of elm-trees are uſed for winter food here for many beaſts, but the hogs thrive upon them better than any. There are no wild hogs here.

Of dogs we have here, as in other places, both large and ſmall, brought up to be houſe-dogs, to watch and to drive the cattle, and to protect them againſt the wild beaſts. Some are raiſed for the chaſe, and particularly for bear-hunting: for this purpoſe they uſe ſmall dogs, for the creature can't ſo eaſily lay hold on them; and they are alſo moſt afraid of ſuch, for reaſons I ſhall give when I come to treat of the bear.

In Nordland they chiefly train up their dogs to catch birds, and to go where a man would not be able to follow them, on the ſteep ſlopes on the ſides of the fields *. They are likewiſe uſed to watch, in the night, the Bergen merchants counting and warehouſes, as they do in Dantzig and St. Malo's. The large and ſurly kind are kept for this Purpoſe; in the day-time they are peaceable enough, but when on the watch as furious as wolves. We have cats both tame and wild; the latter are very large, and their ſkins bear a good price; they live by catching birds upon the trees; they ſteal upon them, and then ſeize them by a ſudden leap †.

* At Roſt Værven, and other places in Nordland, where they have very advantageous birding, each farmer keeps twelve, fourteen, or ſixteen ſuch bird-dogs; they are ſmall, long and lank, with ſhort legs. This kind of hunting is ſometimes the beſt part of the maintenance of many of theſe farmers; and they quarrel very often about the number of their dogs. See farther relating here to cap. iv. §. 2. in the Deſcription of the Landfugle.

† Lakatt fera maculoſa ſolis Norvegis nota hoc nomine, tot enim Catti regionis Norvegicas obſiderit tam varii generis ut vix nominibus inveniendis ſufficere poſſimus. O Sperling in Notis ad Teſtament. Abſalonis, p. 147.

SECT.

The Elk

The Bear

The Leming

The Ermin

The Reindeer

The Lynx

The Martin

The Glutton

The Beaver

## SECT. V.

Wild beaſts ſerviceable to mankind for food or cloathing, and thoſe intended for his puniſhment by rapine, are found alſo native in Norway. And firſt I ſhall ſpeak of the common Deer, which live in (Oſterlandet) the eaſt country, only on the weſt ſide towards the ſea. In the dioceſe of Bergen and Tronheim, where they formerly were frequent, they are of late years much ſcarcer; for the wolves have almoſt entirely deſtroyed them in Oplandene; and have now, for about thirty years, croſſed the File-Field, a vaſt mountain, and annually devour numbers; and we frequently find the ſkeletons well-pick'd in the open fields. There are, however, ſome ſtill both on the iſlands and on the continent. The fine Adel-Hiorte, or Red-deer, is as large as a middle-ſized horſe, with conſiderable large horns. The farmers ſhoot them in winter, being the beſt time to keep them, and carry them to town; and if they have no opportunity, they hide them under the ſnow *, and live upon them themſelves, and have a good price for the hide and horns. Sometimes it happens that the harts and hinds, in little herds, ſwim over pretty broad waters, betwixt the continent and the iſlands; to accompliſh which, they very orderly help one another, by reſting their heads on each others rumps; and when the foremoſt is tired he retreats to the laſt, leaving the next to him foremoſt. Raadyr † are only found in Borgeſyſſel and Nummedale. Deer.

Hares are frequent in Norway, and are very cheap in winter. They are ſmaller than in Denmark, and change colour, in the cold ſeaſon, from brown or grey, to ſnow white.

In the woods they catch mice like cats, and purſue them under the ſnow; they otherwiſe in neceſſity live upon the birch catkins. Rabbits, which are of the hare kind, are found but in very few places; we have them white and grey.

## SECT. VI.

Elſdyr, Elkdeer, which are alſo called Elling ‖, are ſeen in the pariſh of Fiorden, viz. at Ringerige and Romerige, but not Elk.

* Sometimes they make uſe of ſubterraneous caverns to this purpoſe, where the cold is exceſſive; particularly the Hardanguſke Poachers make uſe of a cave in the pariſh of Odde, near Sandvend-houſe, which anſwers to its name Kold-Hull, for nobody can go in, in the hotteſt ſummers day, 100 ſteps, before their breath is taken away, and they muſt inſtantly return. This is a fine place to keep the game or veniſon a long while.

† Rodiur of the Swedes; the Roe-buck. The Capra, Capreolus, and Dorcas of authors.

‖ Ælg of the Swedes; the Elk. Alce of authors.

in great quantity: their make is betwixt the horſe and ſtag, and they are hence called by ſome Equicervos. They are very long-legged, inſomuch that a man may ſtand upright under their belly: they are of an aſh-colour; and on their head they have horns like the deer, but not ſo long and round; but flat and broad, with ſmall points about the edge. It is a harmleſs innocent creature, and keeps near the houſes in winter. The meat taſtes pretty much like veniſon, and the hide ſells for a good price; it is counted the fineſt and ſtrongeſt leather for ſoldiers habits, in the place of buff; but the price is leſs ſince horſe and oxen hides are dreſſed the ſame way for buff-leather. The hoof of this creature is cloven, as cows; and there are often rings made of it, which are ſaid to be good for the cramp, and for epileptic diſorders. This is on the principle of Curatio per contrarium; for this beaſt is often troubled with that diſorder, and cures itſelf, they ſay, by ſtretching his right hind-foot to his ear *, and ſcratching himſelf with it. Their principal food is elm and aſp-leaves, as long as they can be had. That Monſ. Martiniere, in his voyage on Nord, cap. xiv. and ſeveral other places, confounds the Elk-deer with the Rein-deer ſurprizes me, for the difference is very great and evident.

Rein-deer. Reenſdyr, Rein-deer, or, according to the old manner of writing, Hrein Dyr, is a ſpecies of ſtag, that properly belongs to theſe northern countries; and, as far as I know, are not found any where elſe; they will not thrive or generate any where elſe. Tho' the naturalizing them has been often attempted, and they have been tranſported abroad to the great and rich for their curioſity, and to propagate their kind in other parts. This will always be a vain attempt, for no nouriſhment can be found any where elſe that will keep them alive; ſo that they have all periſhed. Perhaps alſo the want of their native air, ſuch as they find in the high hills and mountains here, has been deſtructive to them. See Happelel Relat. Curioſ. Tom. IV. P. II. p. 595, & ſeq. The ſhape or make of the Rein-deer reſembles the hart, and their horns † are covered with a furr, and

* Doct. Mich. Bernh. Valentini, in his Muſeum Muſeorum, p. 429, declares this to be a fable, and cautions (upon the ſame occaſion) all preachers, that they do not borrow of Frantzio, in his Hiſtor. Animalum, and other credulous authors ill-founded ſimilies; for ſuch miſunderſtandings weaken the word of God, where it is intended to be confirmed or eſtabliſhed.

† Errat omnino Thevetus, qui in Coſmographia ſua, apud Norvegos, Finmarkos & Moſcovitas, unicornem facit rangiferum: errant ſimiliter Olaus Magnus, Geſnerus, & Jonſtonius, qui tricornem depingunt. Olig. Jacob. Muſ. Reg. Sect. 1. p. 7.

When the Rein-deer ſheds his horns, and gets new ones in the ſtead, they appear at firſt to be covered with a ſort of ſkin; and, till they come to a finger's length, are ſo

and the branches are turned forwards as well as backwards. In this dioceſe, as well as other places, they run wild about the country, and are ſhot and ſold like other game; their fleſh is very delicate, ſomething drier than the hart; and their hide, which is fine and ſoft, is very much ſought for by the curriers, tanners, and leather-dreſſers. They run at Harangerſke Sneefield in flocks of one, two, or three hundred together; ſo that with one ſhot you may kill three or four. If they are ſhot in the middle of the flock the dead will then be trod to pieces, and be of no benefit; for which reaſon they generally watch the ſtragglers, and thoſe that run at the ſides. The Rein-deers generally take their courſe againſt the wind; ſo that when there is a weſt wind, the Hardankerſke farmer is ſure enough of having good ſport with them; they come then from the eaſt ſide of the country. When he has killed a number, what he cannot ſell freſh, he ſalts for winter proviſion, thereby ſaving his cattle (or, as they expreſs it, their Slaughter-Creatures, which are oxen and cows). In Finmark, particular in that long country called Kolen, which borders upon Sweden, the Rein-deer abound moſt, not only wild, but alſo tame; and they are the Finlappernes, or Finlaplanders greateſt, and almoſt only riches; for they live upon their meat, milk and cheeſe; they make cloathing, tents, and bed-coverings of their ſkins; of the tendons they make their ſowing-thread. Many a man has from ſix or eight hundred to a thouſand of theſe creatures, which never come under cover; they follow the Finlap wherever he ſtrolls, and when they are put to a ſledge, tranſport his goods from one dwelling to another. They provide for themſelves, and live chiefly upon the leaves and buds of trees, on the birch catkins, and upon moſs*, which in winter they ſcrape for under the ſnow, and at laſt get it. They are a neat, clean, briſk, entertaining creature, and ſupport themſelves on very little nouriſhment. Dogs brought up for the purpoſe are their leaders, protectors, and even are as maſters to correct them. The wolf is their greateſt enemy, yet they will defend themſelves, in ſome meaſure, with their horns, as long as they keep together.

ſo ſoft, that they may be cut with a knife like a ſauſage, and are delicate eating, even raw. This we have from the huntſmens account; who, when they are far out in the country, and are pinched for food, eat theſe; which ſatisfy both their hunger and thirſt. When the horns grow bigger, there breeds within the ſkin a kind of worm, which eats away the root. The Rein-deer has over his eye-lids a kind of ſkin, through which he peeps, when otherwiſe, in the hard ſhowers of ſnow, he would be obliged to ſhut his eyes entirely: a very great proof of the Creator's omniſcience and benevolence, in providing for each creature's wants, according to its deſtin'd manner of living.

* Particularly a white dry moſs, called thence Rein-deer moſs.

In

In warm weather they are tormented with a ſort of fly, which lays its eggs under their ſkin, which produces a worm, which eats itſelf out, and then is transformed into a large fly, according to Hr. de la Mortray and Linnæus's obſervations. More relating to their nature and manner, and the Finlaps œconomy with them, may be found in Hr. Peder Hogſtrom's Account of Lapmarck, p. 223, & ſeq.

## SECT. VII.

Bears.

From uſeful creatures I proceed to the hurtful, which we call here by the name of Udyr; and I ſhall firſt treat of the Biorn, or Bears; the male of which, according to the peaſant's dialect, is called Bamſin, and the She-bear, Bingſen.

They are found all over the country of Norway, but are moſt frequent in the dioceſe of Bergen and Tronheim: there are here two ſpecies of them, viz. the Heſte Biorn, or Horſe-bear, the largeſt; and the Myre Biorn, the leaſt*. Both of theſe are a fierce, ravenous, ſtrong, and cunning creature; the countryman allows them too much, and himſelf too little, by giving them the wit of two, and ſtrength of ſeven men. The colour of the hair of the Norvegian Bear is either dark, or a light brown; ſometimes ſilver grey at the ends, which is the beautifulleſt. Their head is ſomething like a hog's, and they have much ſuch a ſnout. They have ſmall eyes, ſhort ears, a wide ſwallow, and ſtrong loins; but their greateſt ſtrength is in their fore-legs and paws. On my annual viſitation-journies, which have moſtly contributed to my collection for this work, I have been uſed to ſtop by the way, and amuſe myſelf with the farmers, entering into converſation with them concerning the properties of various

* Ol. Wormius gives three ſorts of Bears to Norway: In Norvegia tria genera urſorum obſervarunt; primum maximum quod non plane nigrum ſed fulvum eſt, non adeo nocuum ut reliqua genera, graminibus enim & arborum foliis veſcitur unde illis, Græſs-dyr vocatur, & in locis deſertis & ſylvis vaſtiſſimis ſtabulari. Sequi nucibus & glandibus ſaginare ſolet, antequam ingruat hiems. Secundum genus minus eſt & nigrius, carnivorum equis aliiſque animalibus, infeſtum, Ildgiers Dyr vocant voraciſſimum animal, quod licet graminibus & foliis etiam veſcatur, circa autumnum tamen armentis inſidiatur. Tertium minimum nocuum tamen Myre Biorn vocant, quod formicis delectetur earumque nidos evertere ſoleat iis ut potiatur. Nos quartum genus addendum cenſemus alborum nempe urſorum, quod aquaticum vel amphibium eſt piſcibus gaudens, & Groenlandia peculiare, Muſeum Vormian, p. 318.

This laſt ſort, i. e. the white Bear, is ſaid to be very fierce and ravenous. Thorm. Torf ſays, that Anno 1321, one of thoſe killed and devoured eight men before they could deſtroy him, N. P. IV. L. IX. p. 455. Frid. Martens gives an account in his Spitzberg Travels, cap. iv. p. 73, that theſe white Bears have very long hair hanging down; are larger, and in the ſhape of their limbs differ ſomewhat from the reſt of the kind. They float about at ſea upon great flakes of ice, and ſometimes land in countries they don't belong to.

beaſts,

beaſt, birds and fiſhes, found among them: but tho' ſportſmen and anglers hiſtories are liable to be doubted, and ought not to be admitted as authentick, without very full and further proof; yet I have, from many corroborating accounts, gathered among theſe people ſeveral credible facts, as will be ſeen in the following pages.

Particularities of the Bear.

The Bear, which occaſioned this ſhort digreſſion, is ſaid to carry her young but a month; and therefore, like the dog-kind, which alſo haſtes for the birth, brings forth two or three in number, blind and naked, and ſmall as mice, each in form like a mere lump; which the mother continually licks, till it expands or unfolds itſelf, according to the proverb, Lambendo ſicut urſa catulos. Then they ſay ſhe holds them in her paws to her breaſt, to warm them, according to the manner of birds, which Ol. Magnus has alſo obſerved; but ſome are of opinion it is to give them ſuck, as their paps ſtand pretty high on the fore-part of their body. While theſe young ones are bringing up it is moſt dangerous to meet the old ones, for then they will attack, whilſt at other times they are only upon the defenſive againſt, mankind, excepting it be a pregnant woman, whoſe condition they know by ſcent or by inſtinct, and with all their might will ſtrive to get the fœtus, which is a delicious morſel to them, if it happens to be a male. A certain clergyman that related this to me, would not believe it himſelf, till he ſaw an experiment with a young and tame Bear, which he had faſtened in his yard; and till then had not perceived that he had been guilty of any miſchief: but one time leading a woman with child almoſt up to him, he began to make an uncommon noiſe; he roared, and tore about him ſo, that they were obliged to ſhoot him inſtantly. A clergyman's wife alſo, in Sogne-Fiorden, related to me the danger that her huſband found her in (ſhe being alſo big with child). He returning home on a Summer's evening, ſaw a Bear trying and taking all the pains he could to break open the door of her bed-chamber, where ſhe lay in the greateſt anguiſh, hearing him roaring and jumping in vain up at the window, which fortunately was too high from the ground for him. From this it is to be obſerved, that if any of thoſe ſhepherdeſſes, or Giate-Tous, which I have mentioned, who are a whole Summer in the country in their ſæterhut, loſes her virtue, and becomes pregnant, ſhe then endangers her life, as well as the child's doubly.

Dangerous time of meeting the Bear.

Otherwiſe theſe poor creatures are ſo hardy and intrepid, that they will often purſue a Bear, hollowing, with ſticks in their hands, and hunt him till he leaves his prey behind, and

which he ſeldom fails to do. So the all-wiſe God has ordered it, that in ſome meaſure the very fierceſt creatures ſhall be under a fear for mankind*.

The Bears manner of feeding.

It has never been known, that a Bear hurts any child; his food in neceſſity is roots, graſs, and greens, and particularly the Angelica or Quanne, which grows here, and the Multebœr, Tyttebœr, Brambœr and Ronnebœr, when he can lay hold or reach them, on the extremity of the buſh; and tho' he ſometimes tumbles down in the attempt, he breaks off the branches. However, what ſuits his palate beſt is animal food; the fleſh of ſheep, goats, cows and horſes; which laſt, as I have before obſerved, often conquer him.

His attack is made with his fore-paws, and he uſes not his mouth till he is maſter of the creature, and then he ſucks the blood, and afterwards drags the carcaſe to his den: if the road to this be up hill, or through buſhes, that he cannot drag the prey eaſily along, he then has been ſeen to take the whole carcaſe in his fore-paws, walking on his hind-legs only. He has been ſeen alſo going upright, on plain ground, hugging the whole body of a large animal; from which, among other things, you may judge of his great ſtrength.

He does not lay hold of any ſtrange dead carcaſe, like the wolf, but chuſes to be butcher to himſelf, where he is to eat. He does not bite and tear like the wolf, and is not near ſo much dreaded. He maſters the wolf, and corrects him; and therefore that creature does not like to ſtay in his neighbourhood. I was told from Bordne in Rogſund, that an old Graſs-bear was many years known to follow the herds like their guard, and ſtood often tamely by, as the maid was milking; and always drove the wolf away. He did no hurt to any, only in Autumn, when he was almoſt going to look for his den, he would take a kid or a ſheep, as if, per contractum tacitum, accorderade ſummer's wages; but I doubt if there are many of his kind that uſe that diſcretion. They ſay, however, for certain, that in his proper juriſdiction, or the place where he uſually reſides, he will take but one piece from a man.

* 'Tis ſaid, that the African lions are ſometimes in ſuch a temper, that the ſhepherdeſs may hunt them, and drive them about with a ſtick. J'ay lu dans quelques deſcriptions de ce pays-cy, que les femmes peuvent ſe familiariſer avec le lion ſans danger, & qu'en prenant un bâton & l'appellant Tahanne, ce qui ſignifie cocu, ou de quelque autre nom ſemblable, elles luy font perdre ſa ferocité, &c. Il eſt poſſible, que cela arrive lorſque ces animaux ont bien repu, car alors perdent leur courage. Shaw Voyages du Levant, T. I. p. 316.

Of

Of this creature's prudence and diſcretion, they give innumerable inſtances: among many, this ſeems to me moſt ſingular and moſt credible; out of the whole flock of cows, he picks out that which hath the bell round her neck, which, by running, generally gives the ſignal of danger. At this bell he is mightily offended, he tears it off, and if it is not a caſt bell, but a hammer'd one, he'll ſtrike it ſo flat, with his paw, that it ſhall never ſpeak or vex him again. He will fire off a gun, when he has taken it from the huntſman; and he ſhews a great deal of cunning in ſaving his life, when ſet upon by two or three huntſmen together. Prudence and diſcretion.

When the firſt has miſſed his aim, or ſlightly wounded him, he then lays hold of the unarmed man, and hugs him, retreating upon his hind legs as far as he can; knowing very well the others will not ſhoot him, for fear of ſhooting their companion; he then throws himſelf down a bank, a hill, or into a ditch, and there leaves the man, dead or alive; ſometimes it kills both. If he finds himſelf mortally wounded, then he endeavours to rob the huntſman of his hide, which he knows he comes for, and therefore lays hold of a very large ſtone, and if there be a deep water near him, he plunges himſelf into it.

Bears are likewiſe good ſwimmers; they often go into the rivers, and catch fiſh: their broad paws are very fit to row with.

I ſhall not determine whether it is poſſible, that the white Bears, ſeen in Finmarck, according to Hr. J. Rami. his account, are of Greenland extraction; or on the poſſibility of their ever having ſwam over the ſea ſuch a great way, his clumſy body growing tired ſwimming croſs a water of a league; and if he ſees a boat by the way, he will go after it, if it be only to reſt himſelf; if he gets in, he will ſit in the ſtern quite quiet and peaceable; the farmer however does not care to let him in, if he can play his oars faſt enough; but if he has an ax in the boat, the Bear's paws are ſure to ſmart, or pay for it, as ſoon as he touches the veſſel.

Soon after Michaelmas the Bear ſeeks his den, which is his Winter quarters; this he finds under ſome mountain, where the rocks hangs over, or in ſome natural cavern. Here he makes himſelf a large and ſoft bed of moſs leaves, and the like. He hides the opening with branches and boughs of trees, and lets it ſnow up, ſo that he is not eaſily found, but by thoſe that are taught, or have thoroughly learnt, his cuſtoms. In his den he ſhall be taken, ſometimes for a week, with a heavy ſleep, that by ſhooting at him, and even wounding him, he'll hardly awake; Winter retreat.

awake *; and what is moſt ſurprizing is, that he will lye there the whole Winter, without eating or drinking; and yet, according to all accounts, when he goes out in the Spring of the year, he is found to be fatteſt: according to the common ſaying, he has ſuck'd his paws, or held them to his mouth; he ſucks them till they make a white froth, which makes them ſore and tender; ſo that, in the ſpring, when he goes out, he can hardly bear to tread upon a ſtone; he is at this ſeaſon lame, and hops about for ſome time; and of this the huntſmen takes advantage.

His ſtomach is alſo ſick at this ſeaſon, and drawn up of his long faſting; and to cure it, he looks out for an ant's hillock, of which he ſwallows up the whole; this ſcowers his inſide, and cleanſes and ſtrengthens his ſtomach. As long as the Bear lies in his den or hole, he is the property of the proprietor of the wood, according to the Norway law, p. 832. When the farmers go out a Bear-ſhooting, they go commonly two or three in company, that they may aſſiſt one another, if they miſs their aim: they force him, and tire him, firſt with their ſmall dogs, which are broke or brought up to that ſport; and of this kind he is moſt afraid, for they can run under his belly, and will lay hold of his genitals; larger dogs he lays hold of at once, and tears them to pieces. But when the little ones have tired him, with their running and jumping about him, he then gets up to the ſide of a tree, or rock, and ſets his back againſt it, and tears up the ſtones and earth, and throws ſome at one, and ſome at another, to defend himſelf. At this time it is that the markſman is to give him a ball or two with his rifled gun: if he receives it in his cheſt, or under the ſhoulder, or in his ear, he falls: but any other wound makes him the fiercer, and he will fly upon the ſhooter, who muſt defend himſelf, as well as he can, with his empty gun, in which he ought to have a bayonet fixed, as is cuſtomary in Switzerland and Tyrol, to keep him off.

Bear hunting

If the ſhooter or huntſman wants this, and have not a ſecond at hand to ſend another ball at him, he has nothing to defend himſelf with but his knife, which is like a dagger, and hangs by a braſs chain, always on the ſide of a Norwegian farmer; this he takes croſs ways in his hand, to run down the Bears opened throat. If he does not ſucceed in this, his life is loſt, the Bear fleas his ſkin off, and pulls the hair and fleſh over his head and ears, face and all.

* Concerning this, Ol. Berrichius has given us his judicious thoughts, in oratione de animalibus hyeme ſopitis.

Some-

Sometimes, however, the Bear is contented with beating his conquer'd enemy with his paws, till he ſeems to be dead; and when he perceives that he draws no more breath, he'll leave him; ſometimes that way a life is ſaved. If the farmer conquers, which generally happens, he then fleas the Bear, and fixes up the head, as a trophy of victory, and proof of his courage, on his houſe. I have ſometimes ſeen farmers houſes, ornamented with three or four at a time. A hide will ſell for four, five, or ſix rixdollars. They ſay the fleſh does not taſte badly, but 'tis rather too much like liver, excepting when it is ſalted; a fine fat Bear ham is generally commended, and does a hoſt as much honour, at a wedding, as it gives pleaſure and ſatisfaction to the gueſts *.

## SECT. VIII.

The Wolf, Ulven, which is otherwiſe called Varg, alias Graabeen, is now become the plague and torment of this country. In former times it is not known that a Wolf ever was ſeen in the dioceſe of Bergen. Filefield was then the bound of this creature's devaſtations; he never paſſed that mountain, till about the year 1718, or at the end of the laſt war, at which time the armies marched; and all manner of neceſſaries of life were tranſported over that mountain in the Winter, and the inſatiable Wolf followed the ſcent of the proviſion. By that means this creature was firſt drawn over thoſe mountains, and now we are no where ſecure, except on the iſlands: for the Winters are not near ſo ſharp (as I have before obſerved.) Near the ſea it is much milder than elſewhere, and ſeldom ſo ſevere as to freeze over the water to the iſlands, with ice enough for them to go upon. The Wolf.

The Wolf is ſhaped not unlike to a large dog, but its teeth and claws are much ſtronger: they are in colour commonly grey, but in the mountains in Winter white; they have five or ſix young at a time; and we ſet ourſelves moſt earneſtly to deſtroy them. The old ones are very careleſs, and don't ſeek for ſafe places in the woods to hide themſelves, as the bear does; but run about in flocks on the mountains, and barren places †. The Wolf's proper food or ſubſiſtence is prey of all ſuch creatures as he can conquer, even dogs; for in hard Winters he will run into the farmers yards after, and ſometimes devour them at the kennel, Wolf's food.

* Bear's fleſh is reckoned one of the greateſt rarities among the Chineſe. According to Pere du Halde's account, the emperor will ſend 50 or 100 leagues into Tartary, to fetch them, againſt a great entertainment.

† Hr. C. Linnæus is of another opinion, according to his Fauna Suecia, p. 5. where he ſays, that the Wolf's proper habitation is in woods, Habitat hodie vulgaris in ſilvis, ante 26 annos rarius animal in Suecia.

if chained to it; and, in other caſes, inſtead of taking a piece, and going away with it, he kills every thing he can, and leaves what he don't eat behind him. Fierce as the Wolf is, he is daunted when he meets the leaſt reſiſtance; and only bold and daring againſt thoſe that he puts to flight: to thoſe that are afraid of him he is mercileſs: but as long as even the deer is upon the defence he does not attack him; and it has been often ſeen, that not only a cow, but even a goat, when it has turn'd againſt him, and butted at him, or puſhed at him with its horns, have maintained their ground againſt him, and put him to flight. In this caſe the Wolf is not unlike the evil ſpirit, whom the word of God repreſents to us to be a coward, and only to appear bold againſt the unbelievers fear; as it ſtands in ſcripture, Stand up againſt him, and he ſhall fly from you; reſiſt the devil, and he ſhall flee from you.

God's providence.

The Wolf can ſuffer hunger and hardſhips a long time, which is common for beaſts of prey, according to the Creator's wiſe inſtitution; for their proviſion is uncertain, and comes accidentally, and at irregular times†. When his hunger becomes too great he'll eat clay, if it be to be had; and this, as it is not to be digeſted, remains in his guts till he gets fleſh, and that works it off violently; and then he is heard to howl moſt diſmally for pain; and if he is watched upon this, and his excrements are found, they are mixed with a wooly matter, which many have aſſured me. Near Vandelven on Sundmoer a farmer ſaw a Wolf that appeared very ſick, and ſo faint, that he could hardly move along. It gave the farmer double courage, who mended his pace, got up to him, and killed him. He had the curioſity to open him and ſee what was the matter, and he found his ſtomach filled with moſs from the cliffs, and birch tops.

Danger.

Hunger, ſharp as a ſword, makes the Wolf, in the Winter ſeaſon, much bolder than I ever knew him to be; ſo that he will often, and particularly upon the ice, take away a horſe from a ſledge: for this Reaſon travellers, at that time of the year, are generally provided with fire-arms. The late biſhop Munck in chriſtianity would not believe there was any occaſion for theſe; and perſuaded a clergyman of his dioceſs, whoſe name was Hr. Kolbiorn (Father of the eminent Kolbiorns, ſo diſtinguiſhed in the late war by their valour and courage at Fridrickſhald) that it did not become his function to carry a gun with him when he

† Inediam diutiſſime tolerat Lupus, ut & alia omnia carnivora licet voraciſſima magna, utique natura providentia quoniam eſca non ſemper in promptu eſt. Ray Synop. Quad. p. 174.

travelled

travelled to church, or on eccleſiaſtical affairs. But the biſhop got the better of this prejudice, on being taken over the ice by this very miniſter, on one of his viſitation journies. They were in expectation of ſeeing a Wolf, which accordingly appear'd. The biſhop, at ſight of him, began to be frighten'd, and aſk'd Mr. Kolbiorn if he had not his gun; and, from this day, he was convinced that it was both neceſſary and becoming. * To deſtroy the Wolves we uſe the ſame means as againſt the Bears; inſtruments to blow them up, charg'd guns, laid by a carcaſe, that go off with the leaſt touch; which is called Gildre, and is ſpoke of in the Norvegian Law Book, p. 834. Sometimes, tho', at preſent, not very often, they have recourſe to what they call Ulve Huer: theſe are very deep and ſteep holes, dug in the ground, with a narrow place to paſs through, and hid with a falſe cover, like a trap-door, which falls down, and ſhuts up again of itſelf. In theſe pits the Wolf is ſometimes found in a corner, along with other beaſts, whom, out of fear, he does not touch; and it ſometimes happens that the peaſants, having fallen in the trap, are found there, ſitting along with him: for this reaſon, there are ſtrict orders to give notice in all the neighbourhood, when and where ſuch an ulve huer is dug.

Manner of deſtroying them.

Another way of deſtroying them is by means of a ſort of yellow moſs, found upon the fir-trees, which has a poiſonous quality; this is always fatal to Wolves; it is put into a carcaſe and laid for them. In ſome places in this province, where there is found an Eid, that is, a ſmall iſthmus, or any other narrow paſſage, we are uſed to tie a ſtraw rope a-croſs, which the Wolf at firſt avoids; tho' ſome ſay it is not long before it becomes familiar to it, and then he loſes the fear.

Some people make a powder of dried Wolf's fleſh, and ſay it is good to create an appetite; whether it is ſo, or not, I do not pretend to know; but that Wolves, as well as foxes lungs are good for a conſumption, is to be concluded from the pectoral ſyrup as is ſold at the apothecaries, by the name of Loch de pulmone vulpis; wherein the principal ingredients are Wolves and foxes lungs, tho' there are many other things. We may alſo look for the virtues of Wolves lungs in Paracelſi qualitatibus occultis; but this now meets with but little approbation.

Formerly the moſt valiant of our heroes in this country made their doublets, or cloaks of war, called here Beerſercke, of

* To frighten the Wolf and bears from the herds, the ſhepherdeſſes have a horn to blow, which is heard a great way; and on hunting the Wolves, they uſe the ſame, as well as pipes and drums.

Wolves

Wolves ſkins, to appear the more terrible; ſo ſays Thorm. Torf. In primis Berſerki pellibus Lupinis, ad terrorem hoſtibus incutiendum, induti, & externi amicti, quoties pugnandum eſſet, univerſum agmen, ante acei principia præibant, ut hoſtilem inſultum propulſarent ac procul dimoverent. Hiſt. Norv. P. II. L. I. c. v. p. 9. In another place the ſame author tells us theſe furr'd ſkins were uſed for a coat of armour, becauſe they could not eaſily be cut through.

## SECT. IX.

Goupe, or Loſſen.

* Loſſen, which in Norway dialect is called Goupe, is the third among this country's hurtful creatures. It is ſomething ſmaller than a wolf, but as fierce and dangerous: it bites and tears all to pieces that it can maſter. This creature's ſkin is of a light grey or white, with dark ſpots; a ſingle ſkin is ſometimes ſold for 8, 10, or 12 rixdollars, according to the goodneſs: their claws are very ſharp and crooked, turning in like a cat's. They are, indeed, of the cat or tyger kind; their backs bend like them, eſpecially when they are in their holes looking for prey among the creatures that paſs by; they throw themſelves at once on their prey, as ſoon as in reach. When a Goupe is attacked by a dog, he throws himſelf immediately on his back, in the manner of a cat, and turns up his fore legs, to be the better able to defend himſelf: the dog on this lays hold, and thinks himſelf conqueror; but the Goupe then makes uſe of his ſharp claws ſo effectually, that he fleas the enemy alive.

Their properties.

We have in Norway three ſorts of Goupes; the Wolf-Goupe, the Fox-Goupe, and the Cat-Goupe; ſo called from their reſemblance to theſe ſeveral creatures †. They go out like the wolf, excepting that they don't, like him, appear ſo publickly in the open flat country, but keep more in the woods, and lurk in holes in the earth, which they dig for themſelves, deep and winding; but they are drove out of them with fire and ſmoak. In the day-time they'll lie hid, and ſteal upon their prey, as has been already obſerv'd, which they can ſee at great diſtance; for their ſight is ſharp.

* The Lynx. The Lupus Cervarius and Lynx of authors.

† The laſt has the fineſt and moſt precious ſkin; but 'tis ſcarce half ſo big as the Wolf-Goupe, and is more grey than white, but cover'd with beautiful black ſpots, nearly like the panther or tyger. See Shaw's Voyages du Levant, Tom. 1. p. 318. a compariſon betwixt the Loſſen and leopard. Hr. Gabriel Heiberg, paſtor in Nordfiord, and miniſter in Gloppen, takes notice, among other obſervations, that according to ſeveral informations, there is another ſort of Loſſen, whoſe heads are like a Fell, theſe are called Foll-Goupe.

They

They are very nice, and of a ſheep or goat don't eat more than the head or udder; and by this circumſtance one knows that the Loſſen has been there. Tho' they always kill, yet they eat very little in the encreaſing moon; but in the decreaſe they are more ravenous, and will hide or bury the carcaſſes like the bear. The wild cat, which ſeems, from its aſpect, to be of their kind, is their worſt enemy. Its almoſt continual employment is to look out for them in their holes, and ſteal their prey from them. They are very cunning in undermining a ſheep-fold, where they help themſelves very nobly.

It happened lately in ſome of theſe that a Goupe was found out by a ſly he-goat, who perceived his ſubterraneous work, watched him narrowly, and as ſoon as his head came forth, before the body could be got out, butted him, and gave ſuch home puſhes, that he laid him dead in the grave of his own making. It is ſaid that the Loſſen's claws are good for the cramp, when wore round the neck; but I cannot affirm it, or aſſure it to be ſo.

## SECT. X.

Foxes, called Ræve, are found here frequently; they are of different colours, white, red, and black; the laſt are the fierceſt, and their ſkins moſt valuable: ſome of the others, which have two black ſtrokes acroſs their backs, ſell alſo at a good price *. This well-known creature's other properties I need not here deſcribe; for thro' the whole I intend to treat largely upon thoſe creatures only which are peculiar to this country, and diſtinct from thoſe of Denmark, and moſt other places; nevertheleſs, as there are certain general things, known by more inſtances or examples in one country than another, I ſhall ſo far take even theſe into conſideration. Fox.

And here I muſt obſerve, that the Norvegian farmer can relate moſt ſtories of the ſagacity and cunning for which the Fox, in all countries, is famous; ſo that if we, with certain philoſophers, would judge all creatures, notwithſtanding their ſeveral degrees of ſenſe, or what appears in ſome degree of reflection, to be machines, this would hold probable leaſt of all of the Fox; ſome of the before related ſtories of the Bear ſhew alſo the folly of ſuch a philoſophy †. Cunning.

* From Bergen are exported annually 4000 Foxes ſkins, more or leſs.

† Melius philoſophari illi videntur, qui rationem aliquam brutis tribuunt. Certe, nullo negotio, eorum variarum & mirabilium actionum rationem reddunt. Jo. Clericus Phyſ. l. iv. cap. xii. §. 4. It may not be ill applied here to divide with Hr. Heumann, in Act. Philoſ. Tom. xviii. p. 818. the numbers of ſouls under gold, ſilver and copper.

The Swediſh archbiſhop, Ol. Magnus, Hiſt. lib. xviii. c. 39, 40. ſays of the Fox, All that and much more have we heard or ſeen of our own obſervation; more ſtrange things have been related to me than all authors have written.

When he wants to get rid of his fleas without diſturbance, he takes a bunch of moſs or ſtraw in his mouth, and goes backwards into the water, wading by ſlow ſteps deeper and deeper; by which means the fleas have time, and can retire gradually to the dry places; at laſt to the part of the neck and head which he alone keeps above water; and to crown the work, he gathers all his enemies into the before-ſaid bunch of ſtraw, and then drops them in the water, and runs away well waſhed and cleaned. This project is ſo cunning, that mankind could not teach him better.

His long hairy tail, with which nature has not ſupply'd him in vain, he uſes in Norway, amongſt other purpoſes, to catch crabs. They are fond of any thing hairy, and generally will lay hold of it; by which means he draws them aſhore.

* When he ſees the otter is out on fiſhing, he hides himſelf behind a ſtone, and when the other comes aſhore to eat his prey, he comes upon him by a quick and high leap, that the otter, who otherwiſe fears not the Fox, is ſtartled, and leaves him the booty.

A certain perſon was ſurprized on ſeeing a Fox near a fiſherman's houſe, laying a parcel of torſks, or cods heads, all in a row, and could not conceive what he was going to do, till he ſaw that he hid himſelf behind them, and made a booty of the firſt crow that came for a bit of them.

## SECT. XI.

Jerv, or Vielfraſs.

Jerven, or Erven, is one of the beaſts in Norway which few other countries know farther than by report. In ſome places, particularly Fronhiemſke, where they are moſt frequent, they are called Kola; but the common name Jerv, or Gierv, is given them Senſu nativo, per excellentiam; from their violent, greedy, and voracious diſpoſition. The Germans have given this creature alſo the name of Vielfraſs, or Great Eater; and ſome in Latin Gulo †. Its ſize and ſhape is ſomething like a long-bodied dog,

* When the She-Fox is purſued by dogs, and they come pretty near her, ſhe piſſes on her tail, and wiſks it in their eyes, which makes them ſmart; and then ſhe eſcapes. Hans Frids Flemming German Huntſman, p. 112.

† The Glutton, a creature of the weaſel kind. The Gulo of authors; the Muſtela rufo fuſca medio dorſa nigro. It is a wild notion that the people here in general have conceived, which is, that Jerven is the Bear's third cub; though ſhe brings but ſeldom forth more than two at a time.

with

with thick legs, very ſharp claws, and teeth; and he has the boldneſs to attack every thing he can poſſibly conquer among other creatures. Shiffero ſays, that he fiſhes in the water; but in that he is contradicted by Hr. P. Hogſtrom, in his Deſcription of Lapmarck, p. m. 372. He is black, variegated with brown and yellowiſh ſtreaks: his ſkin ſhines like damaſk; it is covered with ſoft hair, and is very precious, and is well worth the huntſman's while to kill them without firing, or wounding the ſkin, tho' difficult: they ſhoot him with a bow and blunt wooden arrows, that the ſkin, which is the only thing that is valuable, may not be cut. The beſt opportunity of catching him, is when he, according to his cuſtom when gorged, preſſes and ſqueezes himſelf between two trees which ſtand near together. By this practice he eaſes and exonerates his ſtomach, which has not time to digeſt what he has ſo voraciouſly ſwallowed.

If this creature finds a carcaſe ſix times as big as himſelf, he does not leave off eating as long as there is a mouthful left; he muſt therefore be tormented with ſuch an inſatiable hunger, that even a cramm'd belly does not abate it; and for this reaſon he is obliged to eaſe himſelf by the artifice I have mentioned.

Perhaps he is created for a moral picture, or an emblem of thoſe people, of whom the Apoſtle ſays, That their belly is their God *.

## SECT. XII.

†Haaren, which is alſo hunted on account of it's ſkin, is like a great brown foreſt cat. The head or ſnout is rather ſharper, and more pointed; under it's belly it is of a dark but ſhining yellow, with a fine gloſs; but thoſe which have this in perfection are ſcarce: their bite is bad, and they ſmell very diſagreeably; they hide themſelves in hollow trees, and ſubſiſt by catching wild mice or birds; after which laſt they'll jump from one branch of the tree to another. There are two ſorts of them; the Eſpe Maar, which is the biggeſt, and of the lighteſt colour; and the Birke Maar, ſmalleſt and darkeſt; this is the ſcarceſt. Maar.

* A friend of mine, a man of probity, has aſſured me from ocular demonſtration, that when the Jerven is catched alive, (which ſeldom happens) and is chained to a ſtone wall, his hunger does not decline the ſtones and mortar; but that he'll eat himſelf into the wall. He is a greedy, but by no means a nice creature; he eats all that he can get.

† The Marten, a creature alſo of the weaſel kind. The Martes of authors; called alſo Fæyna: and by Linnæus, Muſtela fulvo nigricans gula pallida.

## SECT. XIII.

## SECT. XIII.

Squirrel. Egernet, the Squirrel, called here alſo Ikhorn. This is a well-known creature: it feeds chiefly on hazle-nuts, and other dry fruits, which it gathers in large quantities during Summer, for the Winter proviſion. This little creature is grey, and its well-known skin, called Graa Werck, is much valued by the ladies *. They are ſhot with blunt arrows, and are catch'd alſo in ſnares and traps, in this manner: they raiſe a pole againſt a tree, which the Squirrel readily runs up, without regarding the trap at the end, as it has a bird's head, or ſomething of that kind, for a bait. Some have dogs to catch them with; on a chip, or piece of wood, they'll ſail croſs a ſmall water on this expedition, and make uſe of their tail for a ſail; and with one foot they'll paddle, and ſteer themſelves with the other; and thus they eſcape ſometimes thoſe that wait aſhore for their landing, and find themſelves miſtaken, by thinking they muſt come with the wind †.

## SECT. XIV.

Ermin. ‖ Hermelin Ermin, called here Roeſe Cat, becauſe it hides itſelf in the cracks of rocks, and among heaps of ſtones. Some are of opinion it is the ſame which Pliny calls Ponticus Mus; and I am under ſome doubt whether it is different in Kind from the Daniſh weaſel; the ſhape and ſize may be known from its well-known precious white skin, which has a black ſpot on the tail: this fur is now become commoner than in former times; for now in Bergen there is ſcarcely a woman but has a cloak ornamented,

* In Chronico Norvegico, p. m. 94. Haraldum Erici regem Graafell, a pellibus iſtis griſeis cognomen tuliſſe dicitur, quod veſtem ſuam griſeis pellibus forratam geſtare ceperit. O. Sperling in notis ad Teſtam. Abſolon. p. 115. It ſtands in the ſame place that in Vendſyſſel is found a ſort of Black Egerne, or Squirrels, which is introduced in Friſers arms.

† In Ruſſia there is a particular ſort of ſquirrel, that has ſuch wide ſkins at their ſides, that, by the help of them, they fly through the air from tree to tree, uſing them as wings. J. G. du Vernoi has publiſhed ſome Anatomical Obſervations relating thereto; they are to be found in Commentar. Academ. Petropolitanæ, Tom. v. p. 218. under this title: De Quadrupede Volatili Ruſſiæ. And more is to be found in the Engliſh royal ſociety's Philoſophical Tranſactions, Tom. xxxviii. Art. iv. I think that flight is nothing but a long jump, or leap, which is helped by the long and light tail, as well as the long hairs and looſe ſkins on the ſide. I have not been aſſured that this ſort is native of Norway; though by Car. Linnæus's words, it is to be preſumed, who has found them in Lapland. Sciurus hypochondriis prolixis volitans habitat in Finlandia & Lapponia. Fauna Suecica, p. 6. The common ſort of Squirrels are found here in large quantities, and the fleſh is not deſpiſed by the farmers in Valders: it looks white, they make ſoup of it, and ſay that the meat is not bad taſted.

‖ The Ermin is of the weaſel kind; and indeed ſcarce differs at all from the common weaſel, except in colour. It is called Hermellanus and Ermeneus by authors.

faced,

faced, and many thoroughly line them with it. The Norway ermin keeps its colour better than any; it does not grow ſo yellow as the Muſcovy; for which reaſon it is preferred even at Petersburgh. When king Chriſtian I. made his pilgrimage to Rome, he had a mind to make the pope a handſome preſent of the produce of his country; amongſt which were ſeveral Ermin skins, very excellent.

Ermins run after mice like cats; they drag away what they catch, particularly eggs, which are their niceſt delicacy: for this reaſon, it is frequent, in calm weather, to ſee the Ermins along the ſhore, ſwimming to the ſmall iſlands, where the water-fowls eggs are found in great quantities. I have been informed as a certain truth, by thoſe that have ſeen it, that when they have their young on any of theſe iſlands, they'll bring them aſhore to the Continent on a piece of chip, or little bit of wood, the mother ſwimming behind, and with her ſnout puſhing it backwards and forwards, to get it along. So ſmall as this creature is, it is capable ſometimes to deſtroy the largeſt beaſt, as the elk or bear. It does it in this manner: when the creature is aſleep the Ermin will creep into his ear, and lay hold with his ſharp teeth ſo very faſt, that he can't ſlip; upon which, the large animal begins to run about, and roars, till he has exhauſted himſelf: at length, being wearied out, he becomes faint, drops, languiſhes, and dies. In the ſame manner he'll ſteal himſelf upon a ſleeping (Orn) Eagle and Tiur Fugl, and will let this bird fly away with him upon its back; but he continues gnawing, till, by the great effuſion of blood, the bird drops down dead on the ground. They are ſhot with blunt arrows, and catch'd in traps, or elſe betwixt two flat ſtones; one of which is ſet up with a pin, but drops when the thread is pull'd to which the bait is faſtened, and ſo ſqueezes him dead *.

It is ſaid that this creature is ſo cleanly and nice about its white hair, that he would rather go through the fire than through the leaſt mud and dirt. I queſtion whether any body has ſeen him under the neceſſity to declare which he would do; yet whereever he goes with his cleanlineſs, he ſtinks as bad as the polecat. This is eſpecially obſervable of the Ermins when they pair themſelves, which often happens; for both ſexes are very laſcivious.

* It is ſaid that noiſe and ſhrieking, which puts other wild beaſts to flight, makes the Ermin ſtand ſtill; and afterwards, as long as it laſts, he will ſhift about, here and there, but cannot get far. This, if true, is a great advantage to the huntſman.

Two ounces of Ermin's blood, drank warm, is a pretty certain remedy for an epilepſy, or falling ſickneſs, eſpecially if it be old. Relata refero.

## SECT. XV.

Beaver. Bæver, Caſtor, a Beaver, is an amphibious animal: it lives in water as well as on land, and ſeeks its food generally in ſtill or gently running water. It is found in this country moſtly in Solloer, Oſterdalen, and Jemteland. Its ſhape is like a long-bodied dog, with ſhort legs, a ſhort and flat head, ſmall round ears and eyes, a large, thick, and ſmooth tail, conſiſting of many joints. This part of the Beaver ſome call a delicate diſh; the Roman catholicks reckon it as fiſh, not meat, though the reſt of the creature is allowed to be fleſh.

On this creature is a bag, in which is the precious caſtoreum, or caſtor of the ſhops: with this, and with his fine dark brown ſkin, is carried on a conſiderable trade at Elverums fair. That which I ſhall in this part of my work endeavour to explain moſt fully, is what belongs to living creatures, with reſpect to their drift, inſtinct, or inclinations, which they ſeverally have to certain things; concerning their conſervation, and wherein they ſeem to act with a moſt cautious reflection, or deviſe more than one could think or expect. In no part of the treatiſe can I have occaſion to be more particular in this reſpect, than in ſpeaking of the Beaver, eſpecially on the ſubject of his preparing his habitation: on account of his art in this, in the kingdom of beaſts, he deſerves the title of maſter-builder. The manner is this: the Beaver before-mentioned has a great tail, which weighs ſeveral pounds: this is of the fiſh kind and quality, in that degree that it cannot bear to be long together out of the water. It has over the ſkin a kind of fiſh-ſcales, and the hinder legs have flat gooſe-like feet, and are of the ſame fleſhy nature. For this reaſon the Beaver muſt build in ſuch manner, that he can always have his hind part hanging in the water in ſome place which is kept open all Winter, that he may continually throw his tail forwards and backwards in the free water.

He cannot always be ſure of this advantage, as the water riſes and falls. For this reaſon, to preſerve his health, and ſuit his convenience, he builds always at the ſide of a water a wooden houſe, three ſtories high, and regularly raiſed above one another, like a little tower; where he and his mate have each their ſeparate lodging and Bed. To fell the trees for building of theſe houſes, or to repair them when they happen to be deſtroy'd by accident, the great and wiſe Creator has furniſhed this little animal with a tooth, which ſeems unproportionably large; it is of a finger's length, and ſeems as if ground ſharp at the end, not unlike

Wonderful building of houſes.

unlike a boar's tuſk; 'tis of a tawny or yellow colour: with this, as with a ſmall ax, the Beaver fells any kind of trees, and prepares the wood for the joices; he fits all together, and then lays them, or fixes them over one another, ſo that they wont eaſily fall. After this, to tranſport theſe building materials to the ſpot, he uſes a moſt ſurpriſing addreſs, as I am aſſur'd by many who have been witneſs: It is this. A number are employed on this work together; and one will ſuffer himſelf to be uſed as a cart, which the others, like horſes, take hold of, faſtening on him by the neck, and dragging him along; for this purpoſe he firſt throws himſelf on his back, with his legs up, between which they lay their already fitted and prepared timber; and in that manner bring it to the ſpot where the building is to be erected, one load after the other*; but this always coſts the firſt a bare back, for it takes all the hair off; which hair and caſtoreum are the two valuable things found on this creature. The hair or fur, it is well known, is uſed for the fineſt hats, as well as for a very light and ſoft ſort of cloth.

## SECT. XVI.

The Otter, Odder, a well-known creature, which not a little reſembles the beaver, and lives upon all ſorts of fiſh: they are found in Norway, both in ſalt and freſh waters; they live in holes betwixt the rocks; from whence the huntſman decoys them, by imitating the voice of their mates. They are very nice, and will only eat the fatteſt fiſh: the eagle and crow wait upon the Otter to take his leavings; unleſs it be a young Otter, and then the eagle drives him away from his prey. Theſe creatures, when young, may be tamed and uſed to a houſe, by feeding them with milk, and they will become daily fiſhers for their maſter; they'll go out on command, and bring in one fiſh after the other to the kitchen. This a very creditable man in this neighbourhood has Otter.

* Something of this kind is related of the known Maramots, Marmotis or Murmerdyr, in aſpect ſomething like a cat. The learned cardinal Polignac aſcribes, perhaps, too much to them, in his Antilucretios, Lib. VI. lately publiſhed, wherein he relates, that in a civil war betwixt them, the conquered priſoners, after a jure belli, are ſentenced to be ſlaves to the conqueror; and particularly to be uſed for waggons, to bring home their hay and winter proviſion; in the ſame manner and poſition as juſt related of the Beaver.

Protinus ad meſſem ducunt ſervata ferendam
Mancipia, inverſiſque ſolum premere atque ſupinis
Corporibus, tum crura jubent attollere ſurſum
Quatuor erectis perſtent, ut gramina palis
Inde onerant caudaque trahunt animantia plauſtra,
Eraſoque vias miſerorum tergore verrunt.

tried,

tried, and has assured me of the truth. The only thing that is useful in the Otter is his skin: this is covered with thick and short hair, and keeps out water *.

## SECT. XVII.

Badger. The Badger, Brock or Greving, which is also called here Sviin Sok, is like a small hog, with long black or grey hair, and short and crooked legs: he undermines the ground, and lives on mice, snakes and insects. The Badger's bite is bad, and his teeth are very sharp; where he fixes them he does not loose his hold, till he hears the bone crack betwixt his teeth. The penis of the Badger is, like the sea-calf's, a hard bone. His enemy the fox, who is too lazy to dig himself a hole, seizes the Badger's when he is out, and fills it with such a stench, that the owner never cares for it afterwards †.

## SECT. XVIII.

Porcupine, or Hedgehog: the *Danish* dictionary calls this a Hedgehog as well as a Porcupine. The Porcupine, Pindswiin, which is called by many Bustedyvel, is sufficiently known What I have to observe concerning this creature is only this, that he conveys himself often into the bear's holes; and, with his numerous prickles, is so troublesome to his rough host, who cannot any way revenge himself on the impertinent guest, that he is obliged to do as the badger does to the fox, quit his lodging.

Mole. The Mole, Muldvarpen, whose proper Norvegian Name is Vond, is found in the east parts, but very frequently elsewhere: as far as I have been able to find out, 'tis in a manner unknown in this quarter; probably our rocky ground does not suit this famous miner. He lives upon worms and insects during Summer, and in the Winter they eat nothing; but, like the porcupine and bear, lie in a state of insensibility, in a trance, or a kind of slumber.

## SECT. XIX.

Rats. The Rat, Rotter; of these we have several kinds, particularly Forest or Wood, and Water-Rats; these are not longer-liv'd in Nord than Helgeland, where they soon die, if brought

* For several years lately Otters skins have been wanted, in Holland and Germany, more than ever; according to our merchants accounts, who export from hence annually several thousands.

† Nature has wonderfully provided these creatures with a sucking-hole, under their body, betwixt their hind-legs, into which they, in Winter, run their sharp snout up to their eyes, and receive nourishment there, as the bears do from their paws. Hans Frid. Flemming German Huntsman, p. 115.

there

there by ſhips from other places. This J. L. Wolff juſtly obſerves in his Norrigia Illuſtr. p. 94; and abundant teſtimony confirms it. If they live to the following ſpring, it is long; and when the herbs begin to grow up, we ſee them no more. Hardanger, in this dioceſe, does not produce, nor will ſupport, any rats; and in the dioceſe of Aggerſhuus we have obſerved, that on the ſouth ſide of Vormen, a large river which comes from Mios, there are found rats, as in other places; but if they are brought a-croſs the river they won't live: this has often been done, by tranſporting them, with the corn, from the Magazine to the Caſtle of Vingers; in which place the rats have ſoon after been found dead: and they are never ſeen alive in thoſe fields, i. e. from Odal and Solloer quite to Oſterdalen; the earth, in theſe places, doubtleſs has ſome thing mineral in it, from whence exhalations riſe, that are unſupportable to thoſe creatures *.

The Mouſe, Muus: this little creature we have as well in houſes as woods; and ſome, according to Olaus Wormius's account, are poiſonous; deſtroying, or greatly hurting other creatures by their bite: theſe are found alſo along the water-ſide, where they are called Vand-Skiær. Mice.

A very particular ſort of Mice, white, with red eyes, are found in the little trading town of Molle in Romſdalen; but we don't know that it is their native place; 'tis more probable they may have been brought thither by accident; an Eaſt-India ſhip being once obliged to winter there. This is the opinion of Hr. Jon. Ramus, in his Topograph. p. 242. It is here, as in other places, a common ſaying, that juſt before a ſhip is going to be loſt, or a houſe to be burnt, all the rats and mice will quit the ſame; and it is related here in Bergen, that juſt before the great conflagration, in the beginning of the preſent century, which conſumed the greateſt part of this city, the rats and mice univerſally were ſeen to leave the houſes, and retire part to the water, and part, in ſhoals, to march over the rocks at Sandvigen, to the adjoining Hammers village, to the annoyance of the farmers. Suppoſita facti veritate, I could wiſh to have a ſufficient account or reaſon given me for this by our modern philoſophers, who will not believe or receive any thing for a truth, except it can be demonſtrated ex nexu cauſarum; this, I apprehend, in ſuch events, tho' the facts be real, cannot be expected. Certain creatures, we know, are previouſly ſenſible, that is, when they have a feeling in their bodies, of the enſuing change of air; or can denote before-

* For certain creatures averſion or antipathy againſt certain places, ſee Plin. Hiſt. Nat. Lib. IX. cap. lviii.

hand when the weather is altering, according to the unalterable laws of nature.

## SECT. XX.

Lemming. Of the Norvegian quadrupedes, there is yet one left which may be referred to the claſs of rats and mice, it is called by ſome people Læmus; by others, Læmen, Lemming, or Lomhund †; in Lappiſh, Lummick; in Swediſh, Fieldmuus, Rodmuus, Sabelmuus; and of ſome Latin writers, Mus Norvagicus, Norſk Muus. Their original or native country, is the mountain or rock of Kolen, in Lapland, belonging to the Swedes, as well as to the Norvegian neighbouring provinces; and we find a Swediſh writer, namely, Olaus Magnus, is the firſt among us, who, in his Hiſt. Septentr. L. xviii. c. 20. has given us any written accounts of this aſtoniſhing and pernicious creature; though no more than what Geſner, in Icon animal. Cap. xvii. art. 2. has alſo related; Jul. Cæſ. Scalig. Exerc. 192. Sect. 3. Jac. Zieglero in Deſcript. Norveg. ad Caſtra Bahuſ. & Johnſtonis in Thaumatographiæ Claſſe iv. cap. 8. as well as in Hiſt. Nat. Quadruped. cap. xviii. art. 3. has mentioned it: and the induſtrious and learned Doct. O Wormius has thought it worthy to be illuſtrated with a Scriptum Monographon, entitled, Hiſtoria Muris Norvagici vel animalis, quod e nubibus quandoque in Norvegia decidit, & ſata ac gramina magno incolarum detrimento celerrime depaſcitur.

It likewiſe ſtands in the Memoirs of the Academy of Sciences in Sweden, ad ann. 1740, Vol. i. p. 320. Hr. Linnæus alſo remarks on the Lemming, in his two laſt particular writings, and the univerſal report of the country confirms the facts, things not conſiſtent with reaſon only excepted. After this premonition I ſhall give a ſhort extract, and leave it for others to amend; for this is the only way to attain, or make advancements in the knowledge of nature, or to elucidate it by degrees.

The Lemming's ſhape and make, as Wormius L. C. repreſents them in a print, (and I do not pretend to know any more, except from their ſkins, of which I have ſeen many) is in part like a mouſe, and part like a rat, excepting that the tail is very ſhort, about a thumb's length, and a little turn'd up at the end; the legs are very ſhort, and ſcarce appear to keep the belly from the ground; the head and mouth are like a field mouſe, with very long and large whiſkers, conſiſting of about half a ſcore long hairs

† Læ Iſlandis & Norvegis noxa vel damnum eſt. Læminge illis dicti ſunt mures noxii ſegetibus, Norvegis peculiares, quos cœlo decidiſſe, & per agros diſperſos alicubi obviarunt. O. Sperling in Notis ad Teſtam. Abſalonis, No. 78, p. 147.

on

on each ſide: they are ſomething larger than a mouſe, but not quite ſo big as a rat; have very ſoft hair, and of different colours; black, with yellow and brown in ſtreaks, and ſome in ſpots. Their eyes and ears are ſmall, their teeth long and ſharp. They muſt multiply very faſt by what we ſee of them, tho' (God be praiſed) but ſeldom; i. e. about once or twice in twenty years, when they come from their peculiar abodes: at theſe times they gather in great flocks together, conſiſting of many thouſands, like the hoſts of God, to execute his will; i. e. to puniſh the neighbouring inhabitants, by deſtroying the ſeed, corn, and graſs: for where this flock advances, they make a viſible path-way on the earth or ground, cutting off all that is green; and this they have power or ſtrength to do till they reach their appointed bounds, which is the ſea, in which they ſwim a little about, and then ſink and drown. For longer than one year God does not ſuffer this plague to be upon us, and then it only rages here and there, in certain diſtricts at a time *. It does not laſt long, but in the end, as it is ſaid, they have a natural tendency to drown themſelves; or, if this fail, they periſh by the Winter's cold; or thoſe few that do eſcape, die, as ſoon as they eat the new graſs; for it does not agree with them. The Finlaps dogs devour many of them, eating all but their heads. From Kolens Rock, which divides the Nordland manor from Sweden, and which is held to be their peculiar and native place, they are obſerved, when the wandering fit comes upon them, marching in vaſt flocks through Nordland and Finmarck, to the weſtern ocean; and other bodies of them through Swediſh Lapmarck, to the Sinus Bathnicus. They do this, according to Hr. Linnæus's account, in ſuch a direct line, that they will not turn on any ſide, or make any ſweep; and if they muſt go round a large ſtone, then they ſeek their line on the other ſide, and ſo keep ſtrait on. If they find a boat on any freſh water river, they run in at one end, or ſide, and out again at the other, in order to keep their courſe. Their young they carry with them on their backs, or in their mouths. If they once meet with the peaſants to oppoſe them, they will ſtand undaunted, and bark at them, like little dogs. From this circumſtance they are called by ſome Lomhunde, and particularly, if

Plague.

* In Sogne Fiordens Fogderie, in this dioceſs, it happens every third or fourth year, that a few Lemen are ſeen here, yet but few, and cannot do much harm. There is kept here alſo what is named a Mouſe feſtival, once a year, in this manner: they put on their holiday cloaths, and inſtead of working, lay themſelves to ſleep. This took its riſe from a faſt-day which was kept in former times, to avert the plague of Lemen, and other Mice, which ſome pretend have been uſed to fall down formerly from the clouds; but of this I have no authentick account.

any

any one ſtrike at them with with a ſtick, they will bite at it, in the manner of a dog. Theſe vermin prognoſticate a bad harveſt where-ever they take their courſe; but, in return, the country-man expects good hunting, or ſport, of the bear, fox, maar, and ſeveral other large animals, which follow theſe creatures; to whom they are delicious food. All this is eſtabliſhed by, and may be believed from common report, and the teſtimony of many underſtanding and honeſt perſons, who have made nice obſervations on theſe creatures; ſo that their hiſtory being ſo far certain, there remains one thing dubious, which is this; whether it is to be believed that the Lemmingerne, according to common report, do fall down out of the air; which many, both in theſe and former times, will pretend to ſay they have ſeen with their own eyes. Wormius, Scaliger, and other great men, do not ſuppoſe this to be impoſſible: they imagine that the Lemming, like frogs, and other ſmall creatures, may, in their embrios, be attracted to the clouds, and being then come to maturity, may drop down. Cum igitur tot animalium genera in nubibus generata, pluviis decidiſſe, fide dignorum autorum conſtet teſtimoniis quidni & hæc eodem modo generata in nubibus ſtatuamus? L. C. p. 33. To reconcile this ſtrange account to reaſon, others think it more probable, that the fogs, which ſometimes are ſeen extremely thick upon the mountains, may lift them up in multitudes, and carry them away to other places, where it is but of late time they have ever been heard of. This Hr. Linnæus believes as much, as that the ſame fog is able to take up a Finlap with his Reenſ-deer, and carry him away; a notion which the common people really have in that country. However, the aforeſaid philoſopher does not tell us, in the place of this which he explodes, any other way that ſeems more probable for their being brought to us. If we won't deny all hiſtoric faith which declares for their coming from the air, I will venture to give my opinion, to which Hr. Lucas Debes's agreement gives ſome farther confirmation: in his Deſcription of Færoernes, p. 13, he deſcribes a ſort of whirl-wind, called Oes, which elevates up, or draws up ſometimes a whole laſt of herrings out of the ſea, and throws them on the rocks. Such an effect or power the Finlaps allow to a thick fog: concerning the Oes I have already ſpoken largely, Cap. 1. §. ult. P. 1.

Fall from the air.

And, in confirmation of this opinion, it is to be obſerved, however, that ſome are found on the rocks, which appear to be ſtruck dead by their fall; alſo that none in this country have ever

ever ſeen their young, as they do in Sweden. When they are found here they are nearly all of a ſize.

The formular of an exorciſm, which the Romiſh clergy have uſed, in order to baniſh ſuch country plagues with, is introduced by O. Wormius, p. 55, thus: "Exorciſmus. Exorcizo vos peſtiferos vermes, mures, aves, ſeu locuſtas aut animalia alia per Deum Patrem ✠ Omnipotentem, & Jeſum ✠ Chriſtum filium ejus, & Spiritum ✠ Sanctum ab utroque procedentem, ut confeſtim recedatis ab his campis, ſeu vineis, vel aquis, nec amplius in eis habitetis, ſed ad ea loca tranſeatis, in quibus nemini nocere poſſitis, & ex parte omnipotentis Dei, & totius curiæ cœleſtis, & Eccleſiæ ſanctæ Dei, vos maledicens quocunque ieritis, ſitis maledicti, deficientes de die in diem in vos ipſos, & decreſcentes quatenus reliquiæ de vobis nullo in loco inveniantur; niſi neceſſariæ ad ſalutem & uſum humanum, quod præſtare dignetur ille, qui venturus eſt judicare vivos & mortuos & ſeculum per ignem. Amen."

# CHAPTER II.

## Of SERPENTS and INSECTS.

SECT. I. *General obſervations on the creatures, which properly belong to this claſs.* SECT. II. *Serpents of the land.* SECT. III. *Serpents of the waters.* SECT. IV. *Lizards, Toads, Frogs and Snails.* SECT. V. *Graſshoppers, Plow-worms, Slow-worms and Centipes.* SECT. VI. *The Cluſter-worm and Spider.* SECT. VII. *Small worms, which fall in the fogs, and hurt trees.* SECT. VIII. *Others of a like kind, which are thought to come down with ſnow, and hurt the ground.* SECT. IX. *Of Caterpillars, Humble-bees, Gnats and Flies.* SECT. X. *Of Wood-bees, Beetles and Ants.* SECT. XI. *Of Inſects found in the water, and called Water-beetles; of Boat-flies, and Red-worms, and Hippocampus, or Sea-horſe.* SECT. XII. *Of the Concha Anatifera, which is erroneouſly taken to be the firſt ſtate of a certain kind of Geeſe or Ducks.*

### SECT. I.

AFTER the Quadrupedes of Norway, we naturally take into conſideration the Serpents and Inſects; thoſe which creep, and thoſe which have ſome uſe of wings.

This article will be but ſhort for two reaſons; firſt, Becauſe the cold northern parts are leſs fruitful of them than the warmer countries, where the earth and air are better adapted for the peculiar contexture of the * bodies of Snakes and Inſects: and ſecondly, I write only what I know by experience; and I have hitherto had but little opportunity of examining into theſe matters with neceſſary care and circumſpection, eſpecially as the taſte of this age is very delicate in theſe particulars, from the extraordinary lights of many, and of Mr. de Reaumur, preferable to moſt, who has diſcovered things concerning them, to the wonder and ſurpriſe of all Europe. In the mean time I will not omit inſerting the Natura rerum, ſo far as my imperfect knowledge and little experience therein has been able to furniſh. I ſhall obſerve firſt, that the terms, Serpents and Inſects are to be underſtood in the extenſive ſenſe, which the before-mentioned Mr. de Reaumur explains in the following words, in his Memoires pour ſervir a l'hiſtoire des Inſectes. T. I. P. I. p. 69. ſequ. Les anneaux dont le corps d'une infinite de petits animaux eſt compoſe, les eſpeces d'inciſions qui ſe trouvent a la

Leaſt of theſe ſorts towards the North.

* Nevertheleſs Inſects live longer in a cold air than in hot, according to John Swammerdam's remarks in his Biblia Naturæ, Claſs iii. p. 162, where he ſpeaks thus: "Such influence have cold and heat on that ſmall animal the Silk-worm, that tho' heat is life to it, and cold death, that is, it obſtructs all motion, which is a ſtate of death; yet it appears from examples, that even cold may preſerve this little animal's life longer, for their juices and ſpirits circulate ſlower, and don't evaporate ſo ſoon as in immoderate heat." Perhaps the ſame principle may be advanced of the longevity of the Norvegians.

jonction

jonction de deux anneaux, leur ont aparement fait donner le nom d'Inſectes, qui aujourd'hui n'eſt plus reſtraint a ceux qui ont de pareilles inciſions. On n'heſite pas a mettre une limace dans la claſſe des inſectes, quoiqu'elle n'ait point d'anneaux diſtincts, &c.——Des qu'un Hiſtorien a conſacre ſa plume a la gloire d'un peuple, il ſe paſſionne pour luy, il voudroit trouver par tout des traces de ſes conquetes & de l'etendue de ſa domination. Je ne ſçay, ſi des diſpoſitions pareilles ne me font point trop reculer les limites de la claſſe des Inſectes. Je luy accorde volontiers tous les animaux, que leurs formes ne nous permettent pas de placer dans la claſſe de quadrupedes ordinaires, dans celle des oiſeaux & dans celle des poiſſons. Les voyageurs qui nous parlent d'araignees auſſi groſſes que des moineaux, exagerent peut etre. Mais nous avons des papillons dont le vol, dont l'etendue des ailes, ſurpaſſe l'etendue des ailes de certains petits oiſeaux. Une chenille n'en ſeroit pas moins chenille, ſi on en trouveroit de pluſieurs pieds de longueur. Un crocodil ſeroit un furieux inſecte. Je n'aurois pourtant aucune peine a luy donner ce nom. Tous les reptiles appartiennent a la claſſe des Inſectes, par les memes raiſons, que les vers de terre luy appartiennent. Les lezards, qui malgre leurs quatre jambes, s'elevent ſouvent ſi peu, lorſqu'ils marchent, que la plus part ſemble ramper, ſont encore une dependance de la claſſe des Inſectes, &c.

## SECT. II.

Concerning Serpents, Toads, and other poiſonous creatures of that kind, they are not found above Helgeland, in Nordland Fogderie, where the temperate zone ends, but farther down, in the dioceſe of Tronheim; and conſequently not leſs in the more ſouthern provinces. Their bite in general is reckoned not near ſo poiſonous as the Italian or African ſnakes. Serpents.

Of thoſe Serpents which are moſt common to us, and which we call in Daniſh Snoge, J. Ramus ſays, p. 243, there are ſeveral ſorts, viz. black, grey, ſilver-grey, and white; and a certain kind yellow, and triangular*. In many places the people are of opinion that Serpents have their particular holds, and there gather themſelves in great numbers; for

* In a ſmall collection of Norway petrefactions, I have a Snake found at Tonſberg, about as thick as a finger, and half an ell long, crooked, and with one ſide impreſs'd into a piece of pyrites; from whence it had received a bright copper colour, which I trace to the deluge. I never ſaw the fellow to the body of this Snake; for it is all over full of holes, and pretty broad inciſions, as if with hollow annuli, or rings between; the riſing parts, partes convexæ, were quite ſharp.

Probably this is no more than a cornu ammoni, a petrifaction of a ſhell-fiſh, not a Serpent.

they

they are hardly ever ſeen in the neighbouring pariſhes; and I was informed in Nordals Parſonage at Sundmoer, that on that ſide of the river which runs by them there are many in the Summer, but on the other ſide not one; and even it has been try'd to bring them over, and they have immediately languiſhed, and died in a few hours after.

This may have ſufficient ground from the different nature of the ſoil, tho' it is not obvious, and depends, perhaps, upon certain hidden minerals, which may be agreeable, or oppoſite to their natures. Some advance that the much higher mountains on one ſide than the other obſtruct the rays of the ſun, which the Snake is fond of, to be revived by its warmth.

In the ſame place I was aſſured that a peaſant's wife found a Snake in the cradle with her child, who was not in the leaſt hurt by it. Moſt probably this cold creature wanted to revive itſelf in the heat; for when it has lain the whole Winter in a ſtate of inſenſibility, it receives life again gradually by the ſun's warmth in the Spring: and our long Winters and ſhort Summers keep them under, and prevent their increaſing ſo much as in warmer climates.

The kind of Snakes which the peaſant calls Huiid Ormen, is ſought after, and preſerved as a remedy for the cattle in many diſorders; a piece of this creature, particularly the head, is rolled up in a lump of dough, and put down the defeaſed creature's throat. The ſkin that the Snake annually caſts, is uſed to tye round a woman's body in difficult labour; and they imagine it promotes delivery.

In regard to the birth of the venomous kind, by the obſervations of many it is affirmed, that the female parent hangs herſelf upon the branch of a tree, and lets the young ones, one after the other, drop down from her. Whether this is done that they ſhould not bite the mother, according to their nature, I cannot determine.

All theſe creatures are viviparous; for there are ſome kind of them which lay eggs, and they are often found in dunghills, lying upon a great number of eggs, to hatch them as birds do: and ſome have obſerved that they made the great flat toad lie upon them, whilſt they have thrown themſelves round the neſt, to keep him cloſe to his duty.

Singular incident.

Another ſingular incident, which I have heard from many credible witneſſes, may be related here, to ſhew the power of Serpents even over birds, which do not ſeem ſubjected to them; that is, as one of them lies, he'll raiſe his head about a quarter of

of a yard, with his mouth opened, till a lark, a ſwallow, or ſome low flying bird, in its flight happens to have the misfortune to come perpendicular over him; on this it will ſtand ſtill, tho' at ſome fathoms height; and finding itſelf rreſiſtibly impelled, it begins to cry ſadly, and drops directly into the Serpent's mouth, who well knows how to ſeparate the feathers, and throw them out.

That this happens is certain; but how thoſe rays or effluvia that may ariſe from the natural powers of the Snake, with which it, as it were, ſucks the birds down to its mouth, I leave for others to inveſtigate. So much is to be obſerved however, that the Lord of Nature, who ordains one creature for the other's food, has given the Serpent in this a power which does not altogether ſeem to agree with his form and ſhape *. Olaus Magnus ſays, in his Hiſt. Septentr. L. xxi. c. 28. That in this country is to be found a Serpent, called Amphiſbena, with two heads, one at each end, and that it goes forwards with both, moving either way. The ſame is related by Odoardus Dapper, about a ſort of Serpents in America; but I have not heard it in this country confirmed by any body. Mr Edward Chriſtie, rector of the pariſh of Tyſnes, and dean of Sundhordlehn, aſſured me that he had a ſmall Serpent, with two heads on one body and tail; ſo that each head had a moderate part of the body divided for it: he had preſerved it a long while in ſpirits of wine, but at laſt threw it away at the requeſt of his wife, who had an averſion to it, and was afraid ſhe ſhould happen to ſee it unawares, and be terrified. This puts me in mind of a Serpent, or young Dragon, with ſeven heads and necks, on a thick body, and a long

Serpents with many heads.

* Concerning a large ſort of Serpents in Phrygia, Ælianus, in his Lib. ii. de Animal. cap. 21. tells us, Cauda ad terram adniti, reliquio erecto corpore, toto gutture eminente & paulatim laxato ore hiante, volucres ſuper volantes, tametſi ſublime ferantur, ſua aſpiratione, tanquam amatorio quodam, ad ſe attrahere allicere. P. S. When I wrote this I met with, in Biblioth. Britannique, Tom. xii. P. i. p. 136. an extract of philoſophical tranſactions de anno 1734, M. Jun. Jul. Aug. and there is, art. 1. a treatiſe, called, Conjectures ſur le pouvoir de charmer ou de faſciner, qu'on attribue aux Serpens à Sonnettes. The renowned Sir Hans Sloane, as an author, is of opinion that the American Rattle-ſnake (and here we attribute the ſame faculty to the common Snakes) firſt bites and wounds the bird, and then, lying under the branch of the tree where the bird is flown to, watches, that it may drop down into the mouth of its executioner. But in this country they aſſure me quite the contrary to what has been ſaid, averring the unhurt bird's fluttering in the air over the Snake's open mouth. Nor does it to me ſeem probable that the Serpent ſhould let his prey ſlip out of his mouth, to catch it again with leſs certainty. What I have ſet down is what I cannot vouch from my own experience; but have it from thoſe that I have no reaſon to doubt.

In the Hamburgh Magazine we meet with Doct. C. J. Sprenger's famous experiment made with a mouſe that was let looſe on the ground to a Snake: it made a few turns, and ſqueaked a little, and then run direct into the Snake's open mouth, who all the while lay ſtill. Might the Newtonian attraction take place here?

pointed tail, with four legs, covered with ſcales, leſs than the ſcales of a herring. This creature is, as well as I can carry it in my eye, two German ells long. This I have ſeen, and perhaps many thouſands beſides me may have ſeen it; and it is ſtill to be ſeen at Mr. Stampeel's, an eminent merchant in Hamburgh *, to whoſe fore-fathers it was pawn'd for a conſiderable ſum of money, by the Konigſmark's family, who got it, among other booty, at the plundering of Prague. A painting of it is to be ſeen at Copenhagen, in the king's cabinet of curioſities, and which I can truly atteſt is perfectly done from the original. The emblematic Dragon with ſeven heads, which the Scripture takes notice of, has not alone an imagination, but a natural truth for its foundation; and I take this opportunity to obſerve it: but I have no ground to confirm what the often quoted Ol. Magnus, cap. 29. ſays about ſome birch-trees in this country, which are ſeen green Winter and Summer, from a number of Snakes that have made their neſts under the roots, and ſo keep them warm. The ſame author ſays alſo, cap. 30. that the Norvegians are ſo ſuperſtitious, as to hold Serpents ſacred, and ſet milk to them for food; but that ſuperſtition is thrown off long ago.

## SECT. III.

Water Snakes. Water Snakes, Vand-ſlanger, which are commonly dark-colour'd, and are not reckoned ſo poiſonous as thoſe on land, are found here every where in freſh water; but that they, according to an old ſaying, are many fathom long, particularly in Store Mios on Hedemarken, and ſtrong enough to overſet a boat, I have not found confirmed by experience; tho' I will not deny the poſſibility of it; in conſideration of what Livy, Pliny, Strabo, and others report, concerning the bloody fight of Atilius Regulus againſt a Serpent, 120 feet long, which oppoſed the Romiſh army in croſſing the ſea Bagrada in Africa, and killed great numbers of the ſoldiers before he could be deſtroyed; which was done at laſt with pickaxes, for he did not regard their arrows.

Odoard. Dapper, in his African Travels, p. 394, takes notice, that in the land of Quoia there is a ſort of Serpents called Minia, the bigneſs of which may be concluded from their ſwallowing up a whole ſtag.

The great Sea-ſnakes I once held only for a chimera, but am now fully convinced that they are found in the North ſea, as ſure as any other fiſh: it is ſaid, by the people who inhabit the coaſt,

* This is probably ſome artful impoſition; for there is not known to be any ſuch creature in nature.

that

that they are not generated in the ſea, but on land; and when they are grown ſo big that they cannot move about on the rocks, they then go into the ſea, and afterwards attain their full growth. This laſt account I cannot perſuade myſelf to believe, for the ſalt water is not agreeable to the nature of land-creatures; and the Sea-ſnake is generated, without doubt, in the ſea, according to the nature of fiſhes, and other creatures of the ocean.

If that be, which many of the farmers hereabout declare, that they have ſeen ſnakes of ſeveral fathoms length; or if there be truth in their accounts, who, from uncertain relations, deſcribe the Lindormen, or great Snake, it is moſt probable that creature would ſooner go to freſh waters, in caſe its body could not move about longer on dry land.

In Ullands pariſh there is a lake of a middling ſize, which is ſaid to have in it theſe Snakes; and the lake Store Mios, in Hedemarken, is long and deep enough for the largeſt ſhip.

Ol. Magnus, Lib. xxi. cap. 27. Petr. Undalinus, in his Deſcription of Norway, cap. vii. p. 36. and Jon. Ramus, P. III. p. 82, affirm, that there are quantities of large Snakes in theſe waters, one of which was ſeen to reach from Oens Land to Kongs Landet; this I'll leave on their authority, and only obſerve, that if it is true, the relation is mixed with fables and witchcraft, and omens, which ſhould be exploded.

The Sea-ſnake's appearance, they ſay, prognoſticates ſome important incident to the country; this is idle. Of the ſame fabulous kind is, without doubt, the aforeſaid firſt author's relation, L. xxi. c. 27. of a Snake that was found near Bergen, 200 feet long, and 20 thick, which, in the night, left his hole in the rock, to go out and devour the farmers calves and ſheep; he might as well have ſaid cows and horſes. Of ſuch monſters on land we do not pretend to know any thing here; but with reſpect to the great Sea-ſnake, which is a veritable monſter of the ſea-kind, I ſhall ſpeak particularly, when I come to the ſubject of the Norway ſea-animals and fiſh. In the mean time, in the words of Ewerh. Happelius, and upon his credit I will introduce the following relation out of the Mund. Mirab. T. III. L. 1. c. 18. "Nicolaus Gramius, miniſter at Londen in Norway, gives, 16 Jan. Anno 1656, of ſuch a Serpent the following account, from the report of Gulbrandi Hougſrud and Olaus Anderſen, that they had ſeen, in the laſt Autumnal inundation, a large Water-ſerpent, or Worm, in the Spæriler ſea; and it is believed that it had been ſeen before in Mios, and had been hitherto hid in the river Bang. As ſoon as it reached the ſhore

Fable.

This is High-German.

" ſhore of this river, it proceeded on the dry land to the Spæriler " ſea; it appeared like a mighty maſt, and whatever ſtood in its " way was thrown down; even the very trees and huts: the " people were terrified with his hiſſing and frightful roaring; " and almoſt all the fiſh, in the aforeſaid ſea, were devoured or " drove away by it. The inhabitants of Odale were ſo terrified " at this monſter, that none would venture to go to the ſea, to " follow their cuſtomary fiſhing and wood-trade; nor would any " body walk along the ſhore. At the end of the Autumn, " before the waters were frozen, this monſter was ſeen at a " diſtance, and, by its enormous ſize, ſurprized every body; its " head was as big as an hogſhead, and the thickneſs of its body, " as far as the ſame appeared above water, was like a tun; the " length of the whole body was vaſt; it reached, as far as the " ſpectators could judge, the length of three Norway Dannen- " trees, and rather exceeded." This is the account: Sit fides penes autorem.

## SECT. IV.

Lizard. The Lizard, called Ogle or Fire-been, and often alſo Fire-fod, is here much of the ſame ſhape, but of various colours, brown, greeniſh, and ſtriped.

The green ones are found in the fields upon the ground; the dark in the cracks and holes of rocks. Ol. Magnus treats, L. xxi. c. 28. about the ſo called Hagediſſer, which is a large Lizard, of which there are many in the caves and holes of the rocks, but are not hurtful or pernicious like Snakes. They are unknown to me; for what I have ſeen are but ſmall, like the Daniſh, and are very different from the Hagediſſer in warm countries.

Frogs. Toads, Tudſer, and Frogs, Padder, which we call Froer, are here of the known ſort, but they are not ſo frequent here as in Denmark: I have never ſeen here any of the ſmall green Frogs, that will ſit on the leaves of trees, and make a noiſe like the ſound of a bell. Theſe in Denmark are called Peder Oxes Froer *.

Snails. Snails, Snegle: we have peculiar to this country, ſome naked Snails, or without ſhells; theſe are either large and black, or ſmall and of an aſh-grey; and are commonly found under old timber, that has laid long on the ground.

* The common Frogs have this particular in them in this country, that they make a leſs noiſe or croaking in the ſpring, than in any other place; and according to my own and others obſervations, they are in ſome places quite dumb.

We

Worm of a Libella
The Sea Horse
The Louse of the Codfish; call'd Bearfish
The Flow Worm two kinds
a Cluster of Bernacles
a Sizegle Bernacle

We have others that live upon the graſs and upon leaves; alſo in freſh water: theſe are provided with a houſe, or ſhell, which is brown, ſtriped, or black; they are very common.

We have alſo the ſalt water Snail, which is partly ſhaped like a Snake, and a Craw-fiſh; likewiſe other ſorts belonging to the ſea, which ſhall be treated of in their proper place.

## SECT. V.

The Graſshoppers of Norway, Faare-Kyllinger, which the Norvegians call alſo Siritzer and Græſhopper, and ſuch ſmall and common creatures, do not deſerve here any particular remarks, as nothing diſtinguiſhes them from the common kinds in other countries. The ſame may be ſaid of the Leach, called the Horſe-Leach, the common Earth-worm or Dew-worm, and other large and ſmall Worms and Maggots, which are called here contracte Mak or Mark. Graſshoppers.

A ſhort thick Worm, with ſix feet, has the name of the Plow-worm, or Muld-Oxe, perhaps becauſe he knows how to plow the ground, in the furrows of which the eggs are dug or plow'd up in the Spring, and would produce an immenſe quantity of Worms, and afterwards of Flies, if God's providence had not appointed the crows to watch, and given them a particular appetite to devour them ſo ſoon as they appear. Plow-worm.

At Hardanger there is a Worm that I have not heard of any where elſe; it is called the Slow-worm, Slæbe, perhaps becauſe it moves but ſlowly; it is nearly half an ell long, and about as thick as a finger; the goats eat them eagerly, and they don't hurt them. Slow-worm.

The Centipes, called Tuſind-Been, or Skaal-Orm, is half a finger's length, reddiſh, with many ſmall legs under the belly: they live in ſtables and cow-houſes, and are a pernicious creature to the cattle, if they chance to ſwallow them with their provender. Centipes.

When this happens, the peaſants take one of the ſame kind of Worms, pull of the head, and give it to the ſick beaſt, rolled up in a bit of dough.

## SECT. VI.

The Cluſter-worm, Drag-fœ, or Orme-drag, is, as far as I know, a creature peculiar to this country; at leaſt I have neither ſeen or heard of them in Denmark. It is properly a congeries of animals; and conſiſts of an immenſe number of ſmall Worms, gathered and extended for a great way along the earth, juſt like Cluſter-worm.

a rope of many fathoms; and 'tis a finger and half, or two fingers broad. Each Worm is not thicker than a bit of coarſe thread, and as long as an oat-corn; of a watery colour, with a black ſpot on the head. Theſe kind of Worms love to be together, and are found by millions, continually crawling upon one another, yet ſo that the whole company moves continually forwards, and leaves a path behind them, upon the bare ground, like a drawn line. What this almoſt numberleſs quantity of ſmall Worms nouriſhment or ſubſiſtence is, is not to be perceived; and it is probable that they prey upon one another, as M. Labat aſſures us the American ſerpents or ſnakes do: otherwiſe the great encreaſe and number would render the place where they come uninhabitable. Concerning the aforeſaid Orme-Drag Jonas Ramus ſays, p. 242, that the common people, when they perceive it, look upon it as a ſign of ſome good luck, and throw their cloaths in the way; if the Worms go over them the owner is counted fortunate, but if they paſs on one ſide, then, by the ſame ſuperſtition, they think that he'll ſoon die. The ſame author is of opinion, that theſe poſſibly may be the Worms, of which Juvenal ſays, Sat. II.

Non illis prodeſt in pyxide condita Lyde.

Id eſt aranei genus, quod millenos vermiculos parere & ſterilitatem tollere dicitur.

Spider.] According to this opinion the Orme-Drag ſhould be the Maggot, or a ſort of young Spider, or ſomething of that kind *, which I cannot agree to, ſince Spiders, which are called here alſo Kongro, item Spindel, then would be in the ſame places in the greateſt quantities; which is not obſerved, but rather the contrary, in compariſon to other countries. This, perhaps, the damp air, particularly towards the weſt ſide, may occaſion; but it is certain, that of that ſort there are but few, neither are they large; and we are leſs troubled with their webs in the houſes and churches than any where †.

* The Spider is produced in its own form from the egg.

† The learned Hr. Hermand Rugge, rector at Slidre in Valders, related to me ſomething extraordinary concerning a very ſmall unknown Inſect, hardly bigger than a grain of ſand, with legs all round and red: this is ſo poiſonous, that if any beaſt accidentall ſhould ſwallow one, he would inſtantly die.

A little red Spider, common in England, of which the ſame thing is ſaid here, but fabulouſly.

SECT.

## SECT. VII.

A ſort of almoſt inviſible ſmall Worms is brought hither in the Summer with a certain fog, called Haforje, becauſe the Weſt-wind ſets it in from the ocean. Small Worms in fogs.

This Haforje is full of the aforeſaid ſmall Worms, which fall on the trees, and all greens, and do a vaſt deal of damage.

When the honey-dew falls on the fruit or hops, then there follows, and doubtleſs ariſes from that, a ſort of ſmall Worms, which do a vaſt deal of miſchief alſo; againſt which the farmers make uſe of the following remedy: they take one ant-hillock, or more, and boil it in a tun of water, and ſprinkle every green thing with it that they want to ſave. This honey-dew is a kind of a ſlimy moiſture, which dries by the ſun's ſudden heat, and then appears in form of cobwebs; and propably this is the riſe of a half-fabulous account given in Ewerh. Happelii Mund. Mirab. Tom. I. L. II. c. vii. p. 91. in the following words.

" Prætorius in theſe words deſcribes an uncommon rain, which H'gh German
" fell Anno 1665. He ſays in his New World, P. I. p. 245,
" that advices came from Hamburgh of the 29th of July, that
" a merchant had reported, for truth, the following fact, which
" happened in Norway: i. e. There is a wood, which the day
" before was all green and beautiful, and the following day
" quite withered away, and the leaves were all covered with
" linnen, like muſlin or gauze; of which the king of Denmark
" was preſented with 20 ells, and a merchant in Hamburgh had
" alſo had a piece in his hands.

" This we look'd upon as a mere fable at Leipzig, but ſome
" inſiſted upon the fact, the truth of it being vouch'd by ſeveral
" letters from Hamburgh; yet it remained a kind of doubt, and
" people did not know what to believe, till one account came
" in after the other, and cleared up all doubt of this ſuſpicious
" prodigy; and finally, it was put upon footing of credit, by
" a conſiderable burgher and merchant's having received a very
" full and particular account, in the beginning of Auguſt, from
" his faithful friend, a lord of the manor there; which I have
" read, and with aſtoniſhment; viz. from Tundern in Holſtein;
" and wherein was ſpecified, that at a place in Norway, for about
" a quarter of a mile round, there had fallen a kind of a web,
" which had covered the earth. It is almoſt white, ſays the ac-
" count, and has the appearance of gauze; the people in thoſe
" parts had made apparel of it, and dreſſed themſelves in it.
" Perhaps God has ſent it to them as a warning, to make them

" leave

" leave off their pride and vanity, and humble themſelves in " their dreſs. Along with the account the ſame perſon had ſent " a piece of the ſaid gauze, folded round a piece of paper, of " the ſize of a quarter of a ſheet both in breadth and length. " This I examined, and found that it reſembled a cobweb in " fineneſs, but differed in other reſpects viſibly. It was very " ſtrong, and would bear pulling in any part before it would " tear; which our cobwebs wont, for a large fly will tear them. " Vide Frantz. in Hiſt. Animal. c. xiii. tract. 4. p. m. 869, 870; " the ſpeculative ſpeech of Thales to Solon ſetting aſide the blowing " it to pieces, and deſtroying it with a bare finger, as is daily expe- " rienced. And further, this Norvegian gauze, when laid out of " the hands, would curl up together, and, as often as one had a " mind, might be ſtretched out without any hurt; which a cob- " web will not bear; for when you take that off from the walls, " &c. it curls up together like the rind of warm bacon, and is " like a thick thread, and ſcarce poſſible to be unfolded above " once, and brought to its former breadth; not to mention " many more things, in which it differs." So far Happelius of Prætorius.

Some years ſince it was obſerved in the dioceſe of Chriſtianſand, for ſeveral miles round, that there were no leaves on the oak trees, they were all conſumed by a kind of ſmall Worms, which were afterwards transformed into a flying inſect of a white colour. Theſe creatures were all blaſted afterwards, and fell on the ground in ſuch heaps, that it appeared like the cherry-tree bloſſom when it is blown, and falls on the ground.

To the former claſs, or ſome other nearly related to it, one might perhaps refer thoſe ſmall Worms which are ſaid to fall with the ſnow in the Spring of the year, tho' that ſeldom happens after the trees have budded; for if it does, the young ſhoots uſually decay.

## SECT. VIII.

Small Worms that fall with the ſnow.

It is ſaid that in the Spring ſometimes there falls down with the ſnow a ſort of Worms larger, and more conſpicuous: theſe are thick and longiſh, of a dark colour, and they do much miſchief to the greens, and may be counted a plague.

Anno 1684, which was a dry year, theſe were found in incredible numbers, ſwarming together; and where-ever one took the moſt pains to deſtroy them, they increaſed the faſter; they did not hurt the corn, but deſtroyed all other kind of green. In the year 1709 the ſame ſwarm, which ſeemed an inſtrument in

Plague.

the

the hand of God, was ſtretched out to deſtroy the cabbage, graſs, hemp, and flax, but not the corn, which they ſeemed to have orders to leave; for they never hurt it.

The ſevere year, 1742, ſtill freſh in our memories, was remarkable alſo for theſe worms, and for their conſequences. On Palm-ſunday they were ſeen by many people, as they were going to church, lying on the ſnow, and groping for the earth; which has been aſſured me by Hr. profeſſor Erich Grave, who ſent to me, living at that time in Copenhagen, written atteſtations relating to it, which I ſhewed his late majeſty king Chriſtian the VIth, who was deſirous of knowing the origin of theſe worms, but did not much credit that atteſtation, though ſubſcribed by ſeveral farmers in Rygge Sogn, near Moſs.

Hr. juſtice-counſellor Detharding, then preceptor of phyſick in the univerſity of Copenhagen, held immediately a lecture, or diſputation, thereon, which he called Diſquiſitio phyſica vermium in Norvegia, qui noviter viſi, &c. wherein his opinion is, that the eggs of theſe worms, which had remained from the laſt Summer in the cracks, and on the branches of the adjoining trees, fell from thence with the ſnow, and not from the air; and particularly he takes the pains, in his excellent method, to demonſtrate, that theſe worms are not (according to the publick notion) any thing new or uncommon, or different ſhaped; for that, after he had examined the make and form of them in a microſcope, according to the plate annex'd, he found them to be ex genere erucarum, or of the common Caterpillar kind, which the trees are full enough of, both here and in other places.

He ſhews that they, like theſe, have a horny ſhell on the head, ſixteen feet, the ſix foremoſt armed with ſharp claws, the eight hinder on the body flat, to go upon, and two hindmoſt of all placed by themſelves; alſo, that they were, in general, ſmooth, tho' a little hairy, in ornamental tufts, about the body.

Firſt, he aſſerts, that theſe erucæ, like other common Caterpillars, change into the ſo called Nymphas, or hide, or cover themſelves, a ſhort time, in a roundiſh ſhell, and become inſenſible; and then, that they come forth in the ſhape of a butterfly. The only thing in which they ſhew any ſenſible difference is, that theſe Norvegian worms were of a black colour, which is like the fineſt black velvet. This colour Hr. Detharding is of opinion they had received under the ſnow, which uncommon confinement might this year have effected ſome uncommon change in their delicate bodies.

This is his opinion: but if I am to believe ſeveral ocular witneſſes that have ſeen this Worm inſtantly, when it fell black on the top of the ſnow, and have ſeen it come at once, together with the ſnow, from the ſnowy sky; the reſt ſeems dubious *, All that I have further to ſay is, that, in the year 1735, many fields in France were viſited with the ſame Worm-plague, according to Monſ. Reaumur's account, which well deſerves to be introduced here: Elles (les chenilles a douze jambes) nous ont pourtant appris en 1735, qu'elles doivent etre miſes au rang des chenilles les plus capables de nous faire du mal. Depuis les derniers jours de Juin, juſq' a la fin de Juillet, il a paru un grand nombre de chenilles vertes, telles que celles que nous avons decrites cy-deſſus. Mais il a paru encore beaucoup plus de chenilles, qui, comme les precedentes, n'avoient que douze jambes, & que quatre intermediates, dont le fond de la couleur du corps etoit un Verd plus brun. Le Verd de quelques-unes tiroit ſur le noir, &c. Il n'eſt pas aiſe de ſe repreſenter la quantite de ces chenilles, qui a paru cette annee aux environs de Paris juſqu' a tours en Auvergne, en Bourgogne, &c. Elles ont commence par attaquer les legumes; elles ont ravage preſque tous les jardins potagers des environs de Paris, appelles Marais, a un tel point, qu'on n'y voyoit au plus que des fragmens de feuilles; les plantes n'avoient plus que des tiges & des cotez de feuilles, &c. Dans quelques pays ces chenilles ont attaque les avoines. Monſ. de Nainvillier ecrevit a Monſ. du Hamel ſon frere, qu'elles commencoient a les manger aux environs de pluvieux, &c. En Auvergne & Bourgogne elles ſe ſont attachez aux chanvres encore trop jeunes, ou trop eloignes de la maturite, &c. Memoires pour ſervir a l'hiſtoire des Inſectes, Tom. ii. P. ii. p. 94, ſeq. If there be any comfort in what is called fellow-ſuffering, then we ſee that France, ſo highly favoured otherwiſe by nature, has, in this reſpect, not any preference. One thing may ſtill be added from the learned Hr. Ole Tidemand, dean here in Bergen, his account, viz. That in Stokke pariſh, in the county of Jarlsberg, after they had put up publick prayers in the church againſt theſe pernicious worms, they were ſeen to gather in great heaps, and crawl to the neareſt waters, and drown themſelves; and from that time there was not one found.

* Worms in and with the ſnow appears very ſtrange, particularly if we obſerve their ſubtil bodies not formed to bear the leaſt cold, which otherwiſe either kills them, or lays them in a ſtate of inſenſibility. See, in the mean time, Ariſtot. Hiſt. Animal, L. v. c. 19. Ulyſſ. Aldrovand. de Inſect. L. vi. c. 9. Th. Bartholin. de uſu nivis medic. c. 9. Ewerhard. Happelii Mund. Mirab. Tom. i. L. ii. c. 7.

SECT.

## SECT. IX.

Of the Caterpillar-kind there are ſome ſmall ones that are found in houſes, and are called Mol, that is, Moths; they ſpoil cloaths: others live in fields and gardens, where they are known by the name of Kaal Orm, and do a vaſt deal of miſchief; others live on the trees, and damage the fruit: we have them here in great variety, and worthy to fall under Reaumur's examination. Caterpillar.

What in this place is to be obſerved as the country's peculiar property, is, firſt, that theſe Worms particularly love our Norway hawthorn trees, where their web is found fixed ſometimes like a fine gauze; ſo that it ſeems they are ſatisfied with the leaves of this ſhrub, for want of mulberry leaves; and then the Butterflies, which afterwards come forth from their Nymphis, are not only of various colours and gloſs, as in other places *, but there is formed here one very rare and peculiar ſort, which is quite blue; of which a friend of mine ſent a pair very lately to Copenhagen, to be put in the rare collection of Inſects which his excellence, the ſecret conference counſellor, count Rabe, has begun, and is determined to enlarge. Butterflies.

Bees, Bier, do not generate here: our Summers are too ſhort for them, but yet Humble-bees, and other flying Inſects, are very frequent. We have common Flies, large and ſmall, black, grey, and brown, with ſpotted and ſtriped wings. They are all ſeen here, particularly in the Autumn, in ſuch quantities that they are very troubleſome in the houſes. And we have large and ſmall Gnats much more numerous; which, with their buzzing and ſtinging, awake the ſleeping: they would be inſufferable, if they were not drove away by ſmoaking the bed-chamber. Flies. Gnats.

We have particularly a ſort of large gnat, called Mehenk, which gives the moſt trouble. Ol. Magn. obſerves, L. xix. c. 15. that when the ſouth wind blows in Winter, there comes forth from the earth, from under the ſnow, vaſt quantities of ſmall Gnats, that ſwarm mightily about, till the north-wind blows, which kills them; but they revive, or come to life

* La prodigieuſe varieté des formes des inſectes de differentes claſſes & de differens genres, offre un grand ſpectacle à qui ſcait les conſiderer: Quelle varieté dans la figure de leurs corps, dans le nombre de leurs jambes, dans leur arrangement & dans la figure & ſtructure des ailes, dont les unes ſont des eſpeces de gazes & dont les autres ſont couvertes de pouſſiere, de figures regulieres & arrangées, comme des tuiles. Autres ailes ont des étuis, dans leſquels elles ſe tiennent le plus ſouvent pliées par art. Reaumur L. C. T. i. p. i. p. 17.

again,

again, as ſoon as the ſouth wind, which firſt brought them, ſets in again.

C. Linnæus, in his Fauna Suecica, p. 326. takes notice of a ſort of Flies, which are very common in Finmark: Nigra eſt, oculi rubent, ſub his linea alba, abdomen nigro & incarno teſſelatum; thorax tribus canis lineis differt a præcedente, quod dimidio minor, quod non uti prior ſub volatu bombos edat, quod non ita putrida quærat, quodque aliter generetur. Sola magnitudo in facie externa diſtinctam reddit, Vix eandem ſpeciem crederem. In Finmarchia Norvegiæ integras domos fere replet *.

## SECT. X.

Wood-lice. Wood-lice are common here as in other places; a well-known plague, and particularly if they have their origin in fir-wood, of which moſt houſes are built; but which trees, according to their kinds, yield them or not, (for there is a difference); the farmers can diſtinguiſh whether they will ſwarm, as ſoon as they cut into the wood.

Fleas. A ſort of ſmall black Inſects, called Froſk, are ſeen in Norway, hopping about in the graſs like Fleas; and there are alſo ſome other nearly of the ſame ſhape, but not leaping or jumping: theſe laſt keep upon the leaves of ſeveral trees, and are in the beginning green, but are afterwards of a reddiſh white: theſe find their food there, and they curiouſly carve and pierce the leaves of ſeveral trees, and curl and roll them up, to put their furry web between the two membranes, and lay their eggs.

Beetles. Beetles, Skarn Baſſer, called here Tordiveler, are of ſeveral ſorts†; and amongſt them we have ſome, which, from their horned heads, are called Flyvende, Flying-ſtags, or Stag-horn'd Beetles: theſe are found in the woods, and particularly on oak-trees, and ſerve, with other Inſects, for food for birds.

Ants. Ants we have of two ſorts, with and without wings, and we have a red, as well as a dark brown one: they are found here in the fir-woods in vaſt quantities‖. There is is ſometimes found

* The ſpecies thus deſcribed by Linnæus is no other than our common Houſe-fly.

† This ſort is mentioned by Jo. Suammerdam, in Hiſt. Inſector. p. 104, ſequ. He names ſix large, 32 middling, and 127 ſmaller ſpecies; but ſuch a detail concerning the Norvegian kinds in particular, is not to be expected here, either of theſe or other Inſects, tho' I could wiſh ſomebody elſe would undertake it; perhaps there might be found a great many ſpecies in Norway, unknown to other places.

‖ Some are of opinion, that the wings are only the diſtinction of the he-kind. Mares alatos dixi, fœminas maximas pennatas, neutras minimas impennes. Neutra cohabitant per annum, acervoſque exſtruunt. Mares & fœminæ quam primum prodeunt generant ovaque deponunt. Mox his peractis, expelluntur ambo a neutris. C. Linnæus Fauna Suec. p. 306.

in

in Ant-hillocks what is called Norſk-Virak, which is but little inferior to the oriental reſins; this the Ant gathers from the reſinous moiſture that runs from the fir-trees, and ſeparates it with its feet; it then moiſtens it, and maſticates it ſo long, that it becomes a well-ſcented reſin, of which I can ſhow a ſpecimen.

## SECT. XI.

Of the Inſects which belong to the element of water, there might, with nice examination, I am perſuaded, be found many ſtrange and unknown; for what our eyes, without trouble or much examination can diſcover, are not near ſo many as are found by microſcropes, and from their minuteneſs eſcape the naked eye. One ought to be provided with exceeding good magnifying glaſſes, or microſcopes, if one would make diſcoveries of this kind.

What I can remember to have particularly remarked, in regard to Water-Inſects, worthy of obſervation, and any ways uſeful, is confined to theſe following kinds.

Firſt, the little round Beetle: this is ſmall and black, round as a ball, and has a little thin narrow tail; horſes and cows are often hurt by ſwallowing this kind in their water. Water-Beetles.

We have alſo an extraordinary, and otherwiſe to me unknown Inſect, larger than an Ear-wig, and ſomething like it, but very different in the head; it having two crooked horns bending towards each other, which open and ſhut like a pair of pincers; and which I, for want of a known name, will call Kniber, till ſuch time as we know better; with theſe weapons this little animal does a deal of miſchief to the ſmall fiſh. A friend of mine, that has a country-houſe a little way from town, and near to it a good fiſh-pond, aſſures me, that this little Inſect annually deſtroys vaſt quantities of fiſh there, particularly of his young carp; the breed of which, at a great expence, he had imported from Germany: he had no luck in attempting to breed them; for not only the ſpawn, but the young ones, are deſtroyed when they are grown to ſome bigneſs *. Almoſt the ſame inconveniency is cauſed by a ſort of Water-Fleas with long legs; they will ſhoot and leap about upon the water, and then duck; and with their ſharp, tho' ſubtil minute trunk, ſting the fiſh, and ſuck their blood; but they don't keep it long, for, like Water-Flea.

* This is the Worm of one of the large Libellæ, or Dragon-flies.

the aforeſaid horned inſect, they diſcharge a red liquor ſoon after, through the proboſcis that had ſuck'd it in †.

Red-Worm. On the coaſt of the Weſtern ocean, in the water between the many iſlands and cliffs near that ſhore, in warm Summer days, are found more or leſs, and ſome years immenſe quantities of a kind of ſmall, and hardly perceptible Red-Worm, called Roe-Aat; they look like the fineſt ſewing ſilk; they are hardly half the length of a pin, but in ſuch numberleſs quantities, as has been ſaid, that they perfectly colour the water; one quart of water may contain many millions. When the Worms appear in ſuch great quantities they do vaſt damage to the herring-fiſhing, for the roe of the fiſh immediately rots on their fixing on it, and particularly when they are incloſed, or drove up in a creek, as ſometimes they are, by ſeveral hundred or thouſand tuns together, to be rinſed and ſalted occaſionally; which ſhall be ſpoken of in its proper place.

From theſe Roe-Aat it ſhould ſeem that a certain ſort of Snails get that red colour, which occaſions the excrements of one of our coaſt birds, called Teiſten, which lives chiefly on thoſe ſnails, to be of a very high red colour; this they drop all along the ſhore. We may probably have Purple-Snails of the ſame kind as the Oriental, tho' not regarded.

Bear-fiſh. We have here alſo a kind of miſchievous ſea-inſect, called Fiſke-Biorn, that is, the Bear-fiſh, by the common people: it has a whitiſh, hard and ſhining horny ſhell, divided by twelve rings or circles; and on the undermoſt or flat ſide it has twelve feet. The largeſt of theſe as I have ſeen, and of which I have, is about the length of a joint of a finger, but the leaſt not a quarter part ſo big; and they differ in colour. Theſe vermin plague various ſorts of fiſh, but moſt of any the cod.

When he hangs to a hook, and cannot clear himſelf by ſwimming or ſplaſhing, then the Fiſke-Biorn faſtens on him, and ſucks out his juice and fat, ſo that the cod won't be fit to eat. Theſe Fiſke-Biorne, or the like Inſects, hunt many fiſh about ſo, that they ſeek for land by way of ſhelter, about the rocks near there, according to the Creator's wiſe and gracious purpoſes: particularly the ſalmon is ſerved ſo, a fiſh otherwiſe with us difficult to catch.

If it was not for a number of green and blueiſh flat lice, ſomething like bugs, which get between his fins, and plague him ſo,

† De pulice aquatico Hr. Swammerdam has very pretty obſervations in his Hiſt. Inſect. p. 70: as alſo Derham in his Phyſico-Theolog. p. m. 368.

The creature intended by this author is the Notonecta, or Boat-fly; not the Pulex Aquat. of Swammerdam, and others.

that

that he ſeeks for rivers or water-falls, to waſh them off, we ſhould ſeldom have opportunities of getting at him: by that means he falls into the hands of mankind, to a great advantage.

The Sea-Beaver is another and larger Inſect, peculiar to the ſea. It is ſometimes taken here, and in the Nordland Waters that run between the cliffs and iſlands, near the coaſt of Norway; and is ſaid to be an amphibious creature, like the ordinary Beaver, of which I have treated before, in the deſcription of land-animals. By the plate annexed it will be found to be the ſame that is called in the Mediterranean Hippocampus, and by the Italians Cavallo Marino, the Sea-horſe; but that name here ſignifies quite another creature. Hav-Bæveren is an hexangular fiſh, reſembling a worm; its head, neck and cheſt very much reſembles a horſe, yet ſo that the mouth is a kind of trunk *; the body more wonderful, being undulated: every one of the rings formed by theſe undulations, has on the ſix corners ſome ſmall projecting ſpines, and with theſe, as well as the hollow rings, this creature moves himſelf like ſmall Worms, for want of feet. The tail, which begins from their broad belly, is, in moſt that I have ſeen of them, rolled up, and lies in a ſort of circular direction on their back: when that is ſtretched out, I believe the creature's length may be a quarter of an ell; and about the middle it is as thick as a good large thumb; 'tis of a greeniſh colour, towards the back part a little darker, and looks mighty pretty. O. Wormius ſays, that this creature is ſerviceable in ſeveral cures, Muſeo, p. 244. and others again ſay the belly has ſomething poiſonous in it ||. Sea-Beaver.

A ſhort and thick Sea-Worm is found here alſo, for which I don't know a name; it is about the length and thickneſs of a finger, quite white, without head or tail, and with only one opening at the end, which doubtleſs ſerves for a paſſage for both aliments and excrements. Unknown Worm.

The ſtomach is as long as the Worm, and there is no ſign of entrails; the fleſh is white and tough, and of a pretty hard ſubſtance.

Pere Labat ſays that the Americans eat a Water-worm, which, according to his deſcription, very much reſembles this, but is ſomething larger.

* Hippocampus nomen compoſitum eſt ex dictione ἵππος, qui equum ſignificat, & κάμπη, quæ erucam, quia erucam imitatur, non modo corporis flexura, ſed etiam circulis, quibus ut inſecta diſtinguitur. Willough. L. iv. c. 9. p. 157.

|| This is properly a fiſh of the Syngathus kind, not an Inſect.

SECT.

## SECT. XII.

Conchæ avatificæ.

To the Inſecta Aquatica I have yet to add that little creature, which generates in the Conchæ avitificæ; and, according to the general tradition, ſhould be a young Duck or Gooſe, of that ſort that we commonly call Stok-Ænder, and alſo Vand-Eller: and by ſome Angle-Tasker; which laſt name I rather give them, becauſe the ſhell looks ſomething like a pocket. The birds which have been ſuppoſed hatched from theſe, generate in the common way; I ſhall give an account of theſe in the following chapter of birds. That any kind of fowls ſhould grow upon trees, and be properly and truly called Tree Geeſe, is a thing which I have narrowly examined into, and find without the leaſt foundation; tho' it is here, and in other places, taken on the credit of one from another. Hr. Jonas Ramus writes thus in his Chorographical Deſcription of Norway, p. 244, concerning this matter:

Fable of Geeſe ſaid to grow on trees.

It is ſaid that a particular ſort of Geeſe is found in Nordland (one may ſay, with a great deal of truth, that thoſe that are ſuppoſed to be Angle-Taskers, are found in many more places here on the weſt ſide of Norway) which leave their ſeed on old trees, and ſtumps and blocks lying in the ſea; and that from that ſeed there grows a ſhell faſt to the tree, from which ſhell, as from an egg, by the heat of the ſun, young Geeſe are hatched, and afterwards grow up; which gave riſe to the fable, that Geeſe grow upon trees. So far Hr. Ramus, who looks upon it as a fable: but how are we to comprehend ſuch an ambiguous way of talking, namely, to grow upon trees? This, he ſays, is not to be underſtood to grow like fruit growing on a tree*; on the contrary, his opinion is, that Geeſe grow on old piles and timber bulwarks, and the like at the ſea ſide; namely, when the Wild-Gooſe has dropped or left his ſeed on the piles, &c. which gives ſome a ground and reaſon for the belief of it. At the ſame time I may inform the reader, that the well-deſerving, and otherwiſe not credulous, Hr. Ramus, lived in the eaſt country, full 50 Norway miles from theſe coaſts, otherwiſe he would have better examined into the origin or riſe of this opinion, and not have been ſo liable to miſtake.

The truth is this, that on the aforeſaid old timber piles, and alſo on the keels of old ſhips, there is ſeen to grow, as by the

* Michael Meyerus endeavoured to maintain this opinion in a particular treatiſe, De volucri arborea; and in a public ſentence, in the Sorbonne at Paris, upon it, it was allowed that theſe Geeſe, for that reaſon, were not to be reckoned amongſt birds; and therefore allowed to be eat in Lent and faſting ſeaſons. Mich. Bernh. Valentini Muſ. Muſeorum, Lib. iii. p. 466.

exact

exact drawing annexed appears. This peculiar creature is of about a finger's length and half, and an inch broad, and pretty thick: it is brown and ſpungy, a little curl'd or ſhrivell'd, like an apple, when it is dry'd; ſo that at firſt it may be twice the length. Its neck is tough and hollow, like the finger of a glove: when it is opened there is nothing to be ſeen, but ſome ſmall and fine deep black filaments; theſe are like bunches of flax all through. The one end of the neck is made faſt to the timber, in manner of a ſpunge; the other, or the end that hangs down, has a double ſhell, of a light blue colour, and of ſubſtance like a muſcle-ſhell, but much leſs, about the ſize of an almond, and, like it, of a ſharp oval figure. When this ſhell is opened, there is found in it the little creature reported to be a young Wild Gooſe. Almoſt its whole ſubſtance, which is compoſed of ſmall toughiſh membranes, repreſents ſome little crooked dark feathers, ſqueezed together, their ends running together in a cluſter: hence it has been ſuppoſed to be of the Bird kind. At the extremity of the neck alſo there is ſomething that looks like an extreme ſmall Bird's head; but one muſt take the force of imagination to help to make it look ſo: this I have conſtantly found on many examinations; and in all my enquiries, I cannot learn that any one has ever ſeen any thing more; though there are many who pretend to appeal to witneſſes for the fact, that have ſeen this young Gooſe, as they call it. I will allow that they may have ſeen in this ſhell a living Sea-Inſect, as it certainly is, but nothing elſe.

When the Duck's egg is opened, the young one is never found like this, conſiſting of nothing but feathers; they on Ducklings come afterwards, in the place of the down, which appears firſt; but here is no down, and there ſeems to be no body, nothing but long, crooked, ſqueezed up feathers, with a little point, or ſmall button, at the end, that may reſemble a head, if fancy will have it ſo, as has been ſaid.

The opinion of the Geeſe's ejected ſeed is, ſetting all the reſt aſide, doubly improbable, in conſideration that the ſame conchæ anatiferæ are found not only on old timber, floating on the water, but alſo on ſmall branches of ſuch ſea-trees as the fiſhermen affirm grow only in the deep ocean, from the very bottom, at 100 fathom or more. I have ſome of ſuch branches, with this ſtrange growth on them. Where theſe grow no bird can come; and their evacuations, eſpecially the fluid kind, cannot ſink thither, or be collected in a ſtate of prolification. I will not take upon me to diſcuſs how contrary to nature one might call ſuch a

generation, from the ſemen of the male, without the aſſiſtance of the female egg; but in the mean time, it is in this caſe as in many other branches of the ſtudy of nature, in which one may with a certainty aſſert what a thing is not, though, at the ſame time, one cannot poſitively ſay what it is. I remember to have heard, though only by report, and that not the beſt warranted, that in France, from the like ſhells, yet hanging to their necks, have been ſeen ſeveral ſmall Worms crawling into life and liberty. Georgius Marcgravius ſeems to have been of this opinion; and in his Hiſtoria Naturalis Braſiliæ, Lib. iv. cap. xxii. p. 188, ſays of the ſame Sea-worms or Inſects growing on trees, what here follows: Reri apiya Braſilienſibus, vulgo Long-neck, Hydrum vocari poſſe puto. Oriuntur a pice navali, ſubter navem immediate adhærentes tabulis innumera copia. Corpus autem eſt unum aut duos digitos longum, teres, æqualiter craſſum, craſſitie dupla, pennæ anſerinæ. Huic annata eſt conchula figuræ ovalis, magnitudine olivæ, major aut minor, conſtatque quinque partibus, albi coloris, ſed ubi partes coaluerunt crocei. Non dura ſed molliuſcula eſt conchula. In uno latere rimam habet, per quam capitulum ſuum exſerit, conſtans multis elegantibus quaſi tornatis filamentis, lunatis, ſemi-digitum longis. Color corporis eſt fuſcus ſeu nigricans, ut & filamenta capitis. Immediate autem pici adhærent, quaſi corpus abſciſſum eſſet, & agglutinatum abſciſſa parte, nec unquam a navi ſe poſſunt ſolvere, niſi vi abſtrahuntur: Multa millia ſæpe uni navi adhærent, præſertim proram verſus inferius, & navis curſum retardare dicuntur. Vivunt multas horas detracti extra aquam. What I have to obſerve on this is, that though Marcgravius does not allow this creature to be a young Duck, but properly a Water-worm, yet he is miſtaken to ſay, Oriuntur e pice navali; rather better in pice: it is only becauſe the Worm perhaps finds a better opportunity to ſtick his eggs there. Our Bergen ſkippers ſay, that when they come home from a long voyage from Spain, or the Mediterranean, and have their ſhips clean'd, they find a great many of theſe creatures hanging in bunches all under the bottoms; that the pitch does not breed theſe worms is ſufficiently ſeen; for at any time, by ſearching for them, they are to be found on bulwarks and piles, which are never pitched; not to mention thoſe which I have of the ſame kind, hanging upon branches of thoſe deep growing ſea-trees, as has already been ſaid. To confirm the truth of this, more will be ſaid in the following chapter, and will be found in the article of Ducks. I ſhall further quote O. Wormius's words, in Muſeo, p. 257. De harum avium generatione

generatione variant autores. Quidam more aliarum avium per coitum propagari putant, quidam ex ligno putri naſci volunt, alii ex corruptis arboris cujuſdam pomis, alii ex conchis. Quorum ſententias & rationes expendere hoc loco, noſtri non eſt inſtituti. Ut nihil de iis dicam, qui ſtatuunt, diverſas eſſe aves, quæ ex conchis proveniunt, ab iis, quæ ex putridis lignis aut pomis ortum trahunt. Immo non deſunt, qui ex quovis ligno naſci poſſe adſtruant, dummodo in mari & undis juxta Hebrides putredinem concipiant. Juſt as doubtful writes Jul. Cæſ. Scaliger about this Inſect, Exercit. 59. Sect. 2. and ſays, that on the French coaſt they are called Craban. It is a pity that Doct. Grothauſen's Examination of this Inſect is not come to light; on which are Hr. Frid. Chriſt. Leſſer's words, in his Teſtaceo Theologico, P. i. L. i. c. 3. §. 112, p. 442, thus: Anno 1732, the following writing was promiſed: Specimen Anatomico-Phyſicum, quo genuina magis & accuratior hiſtoria conchæ Pholadis pſeudocheneæ, vulgo anatiferæ dictæ, quæ anili fabulæ, quod anſerum quoddam genus in arboribus creſcat, anſam dedit, ratione & experientia ſtabilitur, & figuris æneis, ad vivum inciſis, illuſtratur, ad demonſtrandam ſummi Numinis exiſtentiam contra Atheos & concelebranda mirifica ejus opera & infinite ſtupenda, in lucem editum a T. W. Grothaus. M. D. I wrote on that account Anno 1740, to a friend in Copenhagen, who, on the 20th of December, adviſed, it was not publiſhed. The late learned Grothauſen had undertaken, according to account, to write a Natural Hiſtory of all the king's dominions; but that good man's death at St. Thomas's, in the Weſt Indies, fruſtrated our hopes; he was otherwiſe qualified for the undertaking, preferable to me, and perhaps any other.

CHAP.

# CHAPTER III.

## Of BIRDS.

SECT. I. *Order and diviſion.* SECT. II. *Of Amphibious Birds, their nature and properties.* SECT. III. *Dangerous bird-catching in ſome places.* SECT. IV. *The Growſe, and ſeveral other kinds.* SECT. V. *The Dove, and ſeveral others.* SECT. VI. *Ducks, and other Water-fowl.* SECT. VII. *The Falcon, and other like kinds.* SECT. VIII. *The Kite, and ſeveral others.* SECT. IX. *Of ſeveral Sea and Freſh-water Birds.*

### SECT. I.

IN the Natural Hiſtory of Norway, the deſcription of Birds is yet to come, and that of the Fiſh; they make the two moſt intereſting heads: and firſt, ſomething is to be ſaid in regard to the diviſion and order of Birds into their proper claſſes. Aldrovandus, Geſnerus, Willughbicus, Zornius *, Klein, and others, who, ex profeſſo, have treated on Ornithology, or the Hiſtory of Birds, in particular writings, claſſing them either by their element, or where they take up their abode, their magnitude, or form; particularly their claws and bills, their legs, way of ſubſiſting, their ſervices or injuries to mankind: but as I on one ſide allow that theſe limitted diſtinctions would give a more diſtinct idea of them, and would be matter for a treatiſe on the ſubject alone, where all the known Birds of all countries might have place, and make all the claſſes compleat; I find on the other hand, that which ever of theſe methods of claſſing one chuſes, there will be no quite diſtinct, or abſolute ſeparate bounds, to be expected: many Birds, in one reſpect, may belong to a certain claſs; but have, in another reſpect, ſomething which, with as much reaſon, would range them in another: conſequently there is no rule without exceptions, contractions, or extenſions.

The order of Birds according to their ſeveral claſſes.

For this reaſon, I have not thought it neceſſary to confine the reader's thoughts to any of the before-mentioned claſſes, and particularly as none would be compleat, eſpecially with enume-

* This author treats the moſt regular and moſt amply, but is rather too prolix on the diſtinctions of Birds, and the limits of thoſe diſtinctions, in his Petino Theologic. P. ii. c. 1. from §. 1 to §. 81.

rating

rating of Norway Birds alone, without introducing thoſe from foreign countries, which I do not intend in any article, only ſo far as it may be neceſſary by way of parallel, or to clear up any capital point of my own.

I have therefore followed the names in my own language, in alphabetical order, and, in the ſubjoined ſhort deſcriptions, have ſaid as much as will ſhew to what claſs each belongs; yet nevertheleſs, if any body is deſirous of ſeeing the names of the Land Birds, Water Birds, and thoſe of the ſhores, at one view, the Land Birds of Norway are the following, according to their names alphabetically in that language: Aarfugl, Akerloe, Aker Rixe, Allikke, Berg-ugle, Bogfinke, Dompap, Droſſel, Due, Egde, Elvekonge, Erle, Falk, Flagger muus, Foſſefald, Gertrud-fugl, Glente, Gog, Heibe-hog, Honne, Horſegog, Jerpe, Irisk, Knotter, Kiodmeiſe, Krage, Lerke, Natvake, Nordvinds-pibe, Orn, Raun, Regnſpo, Ringetroſt, Sibenſchwantz, Siisgen, Skade, Sneefugl, Sneppe, Sondenswindfugl, Spurre, Stær, Steendulp, Stillitz, Tiur, Vagtel, Vibe, Ugle.

The Birds that ſubſiſt only upon fiſh, floating moſtly on the water, and ducking under, tho' not all equally deep, are the Alke and Ducks, tame and wild, of many ſorts, Edder or Eider-fugl, Geeſe tame and wild, of various ſorts, the Hav Aare, Hav Heſt, Hav Sule, Immer Langivie, Lom, Lund, Savern, Skare, Skrabe, Svane.

The Shore Birds are thoſe which, I have juſt ſaid, haunt the coaſt, or live about the water that runs between the cliffs, rocks, and iſlands, detached from the continent, and feed partly upon ſmall fiſh, ſuch as they can reach with their bill, and partly upon inſects, ſhell-fiſh and weeds; the ebb and flood daily produces plenty and variety of food for theſe: they dont venture to go out far, or where it is deep, and ſo are in a manner amphibious. Of the number of theſe are the Heigre, Boefiar, Fiær Kurv, Fiske Folck, Fiske Orn, Fiskeh age, Jo fugl, Kiald, Krykkie, Laxetite, Maaſe or Maage, of various ſorts, Sand Tol, Sand Tærne, Skiee, Spave, Strand Erle, Strand Sneppe, Teiſt, Tiæld, Temd.

## SECT. II.

Among the firſt, namely the claſs of Land Birds, are to be found but few, but what are known alſo in Denmark; and I may ſay in moſt other European countries, unleſs we except the Tiuren, Jerpen and Rypen; but in the two laſt claſſes of Water and Coaſt Fowl, Norway has by much the greateſt number, and among thoſe, ſome that are little known in, tho' others in common with

the countries lying oppoſite, viz. Scotland and the Orkneys, Færoerne and Iceland; there are others again that I never could find out any where elſe, as far as my intelligence could reach; and this is certainly one of thoſe bounties, not ſufficiently regarded, the great Creator has beſtowed on this country, that particularly the weſt ſide, which, with its numberleſs harbours, creeks, iſlands, high cliffs, hollow mountains and caves, is fortified, by the wiſe and good Creator, as a particular refuge and aſylum for an incomprehenſible, and indeed almoſt incredible number of Sea and Shore-Fowls, which ſometimes are obſerved out at ſea, at the diſtance of two or three Norway miles*, in ſuch large flights, that they obſcure the heavens, and one would imagine all the Sea-Fowl of the univerſe were gathered together in one flock †. Theſe Birds, with their feathers and down, which are gathered and ſent to foreign parts, and partly with their fleſh and eggs together, afford the inhabitants a very good maintenance, beſides the extraordinary good graſs that grows after the manure left by the dung of theſe Birds, on the iſlands, and even in the ocean, which frequently looks white, and as if it were covered with it and the eggs in the neſts of theſe Strand Birds.

Their numbers by the ſea-ſide.

Not all the eggs, but ſome ſort of them, are as good as hens eggs, and great quantities come to market in this town, where the bakers in particular know how to uſe them; the ſhells are of various colours and ſizes, as ſhall afterwards be obſerved concerning each of them, as far as my intelligence reaches; moſt of them are white, green, or brown, and almoſt all have black ſpots on them; the Water Fugle egg-ſhell is ſomething thicker, and alſo the white in a greater quantity, than in others; for which Count Aloyſius Marſili, in his Danub. Panon. Tom. v. p. 124, aſcribes this reaſon, that the young Sea Birds, which are nouriſhed by

General Properties.

* One Norway mile is about ſix Engliſh miles.

† The large quantity of Sea Fowl that are in Norway, agrees with what Dr. Harvey writes of the Scotch, de Generat. Animal. exercit. xi. with Deuſing. in fine Diſſertat. de Anſeribus Scoticis. Eſt inſula parva, Scoti Boſſe nominant, haud amplius mille paſſuum circuitu amplitudo ejus clauditur. Hujus inſulæ ſuperficies, menſibus Maio & Junio, nidis, ovis pulliſque propemodum tota inſtrata eſt, adeo ut vix, præ eorum copia, pedem libere ponere liceat: tantaque ſupervolantium turba, ut nubium inſtar, ſolem cœlumque auferant: tantuſque vociferantium clangor & ſtrepitus, ut prope alloquentes vix audias. Si ſubjectum mare inde, tanquam ex edita turri & altiſſimo præcipitio deſpexeris, idem quoquoverſum, infinitis diverſorum generum avibus natantibus prædæque inhiantibus, opertum videas. Si circum navigando imminentem clivum ſuſpicere libuerit; videas in ſingulis prærupti loci crepidinibus & receſſibus, avium cujuſlibet generis & magnitudinis, ordinis innumerabiles, plures ſane quam nocte, ſereno cælo, ſtellæ conſpiciuntur. Si advolantes avolanteſque eminus adſpexeris, apum profecto ingens examen credas. Haud facile dixerim, quantus reditus quotannis ex plumis ovorumque coctorum commercio poſſeſſori accedat; adeo quod ipſe mihi narravit, fidem exſuperat. What Harvey has ſaid of the way of boiling the Sea-fowls eggs to ſell them with great profit, is not uſed in Norway; the reſt agrees.

the

the white of these eggs, are longer in hatching than others, on account of the cold *, tho' this does not agree with my observations, as will be seen in the following pages. But certainly there is to be seen the providence of our great and benevolent Creator, in giving these eggs a thicker shell, without doubt, according to Mr. Anderson's observations, in his description of Islands, §. L. i. p. m. 46, to prevent their perishing with the cold, which is owing to their being near the water, and the dam's long absence in search of food; tho' most sorts of Water Fugle live, for that reason, in a kind of married state, and orderly take their turns, the cock and hen alternately sitting on the eggs; and when 'tis the hen's turn, the cock often stands at some distance as a watch or centinel, to guard her. Those that leave their eggs, and come again to them in the hollow cracks and holes of the cliffs and rocks, where hundreds are laying together, never miss their own, tho' a man could not distinguish them. See Zorgdrager Groenlandscher Viscber, P. ii. c. 14. p. 153.

God's providence.

The flesh of certain Water Birds, particularly the Duck's, and that of some others, is very fat and eatable; others, from the fishy taste which they acquire by eating fat and ill-tasted fish, are not very fit for the table, unless they are first parboiled in vinegar; others again are pickled by the farmers, and are very good that way; by that means other meat is saved, and may be sent to town to be sold. But the principal advantage they yield is their feathers, particularly the Edder-fuglens, Lundens, and Alkens, which are frequent every where on this coast; but the finest and most profitable are got in the Nordland districts; they are gathered and annually sent down to the merchants in at Bergen.

Frideric Martens observes in his Spitsbergenske Travels, cap. ii. p. 60, that all Sea Birds in the hardest storms turn their heads against the wind, that it may'nt spread their feathers, but rather close them together to keep the body warm.

## SECT. III.

How each of these different sorts of Birds are taken will appear in the following pages; and as far as I can find, they are obliged to use different methods. But first I shall give the reader

* Quia ex solo albumine fœtus formatur, longum nihilominus tempus requiritur, usquedum ad perfectionem sive, exclusionem pervenerit, ob impedimentum humiditatis seu frigoris, quod sentiunt in nidis suis, quos semper in, aut circa aquas exstruunt.

some

ſome account of the moſt important and dangerous way of bird-catching, which is practiſed here more than in any other place, and moſtly at Tranen, Varoe, Moskoe, and Ruſt, in the aboveſaid Nordland diſtricts, where they keep dogs trained on purpoſe, to fetch the Shore or Strand-Birds out of their holes, which are almoſt inacceſſible. In this diſtrict one farmer muſt not keep a greater number of theſe dogs than his neighbour, that he may not prejudice him in his livelihood: the dogs as well as the farmers run the greateſt hazard of their lives, and ſometimes periſh by unhappy falls; for they either climb up thoſe exceſſive high and ſteep rocks, finding but here and there a hold or place for their feet; or elſe they are let down from the top, 100 fathoms or more, that they may get into the hollows under the projecting cliffs, and caves formed by nature. At Færoe, which exports annually ſeveral thouſand pounds worth of feathers to Copenhagen, there is held a Bird-hunt of this kind, which is circumſtantially deſcribed by Mr. Lucas Debes, who was many years a dean in that country; and I ſhall therefore, out of his Færoa Reſerata, p. 140, & ſeq. often quoted before, inſert what relates thereto, which cannot be read without ſurprize.

It is not to be deſcribed, he ſays, with what trouble and danger they look for the Birds in the high and ſteep rocks, many of which are more than 200 fathoms perpendicular; and there are particular people who, by nature, are fitted for this kind of bird-catching, and are called Bird-men: they make uſe of two methods to catch them; they either climb up theſe perpendicular rocks, or elſe are let down from the top by a ſtrong and thick rope: when they climb up they have a large pole, of eleven or twelve ells in length, with an iron hook at the end: they who are underneath in the boat, or ſtand on a cliff, faſten this hook to the waiſtband of the man's breeches who climbs, and a rope round his waiſt; by which means they help him up to the higheſt helde, or projection, that he can reach, and fix his feet upon; then they help another up to the ſame place; and when they are both up, then they give them each their bird-pole in their hands, and a long rope tied round each other's waiſt at each end; then the one climbs up as high as he can, and where it is difficult, the other, by putting his pole under his breech, puſhes him up, till he gets to a good helde, or ſtanding place: the uppermoſt of the two then helps the other up to him with the rope, and ſo on, till they get to the place where the Birds build, and there ſearch about after them as they pleaſe. As there are in theſe rocks many dangerous places they are yet to climb, whilſt they are bound together with

*The manner of Fowling in Norway*

with a ſtrong rope, one always ſeeks a convenient place to ſtand ſure, and be able to hold himſelf faſt, whilſt the other is climbing about. If the latter ſhould happen to ſlip, then he is held up by the other, who ſtands firm, and helps him up again; and when he has got ſafe by thoſe dangerous places, then he fixes himſelf in the ſame manner, that he may aſſiſt the other to come ſafe to him; and then they clamber about after Birds where they pleaſe. But accidents ſometimes happen; for if the one does not ſtand firm, or is not ſtrong enough to ſupport the other when he ſlips, they both fall, and are kill'd; and this way there are ſome every year deſtroyed.

Hr. Peder Clauſon, in his Deſcription of Norway, writes, that in former times there was a law in the country, that when any one by climbing the rocks fell, and was killed, and his body was found, that then his neareſt relation ſhould go the ſame way. If he could not, or would not venture, then the deceaſed was not allowed a chriſtian burial, but treated as a criminal, who had, by that means, been his own executioner; but that law is not in force now a days.

When they, in the manner already related, get up the rocks to the Birds, in thoſe places where they ſeldom come, the Birds are ſo tame that they may take them up with their hands; for they do not readily leave their young: but where they are wild, there they either throw a net over them in the rock, or elſe thoſe that are flying away, or come flying in again, they throw their poles againſt with a net on them, and ſo entangle them in it. This way they catch vaſt numbers of the Lumvifer, Alliker, and Lunder. In the mean time there is a boat lying underneath, on the ſea, into which they throw their dead fowl, and ſo quickly fill the veſſel. When the weather is tolerably good, and there is a good deal of game, the birdmen will lie eight days together in the rocks; for there are here and there holes that they can ſafely and ſecurely reſt in; and proviſion is let down to them by lines, and others go every day to them with little boats, to fetch what they catch.

Many rocks are ſo frightful and dangerous that they cannot poſſibly climb up them; for which reaſon, they continue to get down from above, which they call to ſie; this is the ſecond way of ſearching for Birds, and is done thus: they have a ſtrong rock-line, or rope, eighty or an hundred fathom long, and about three inches in thickneſs; one end of this the birdman faſtens about his waiſt in the place of a belt, and then he draws it betwixt his legs, ſo that he can ſit on it; and ſo he is let down with his

bird-pole in his hand: ſix men at top hold the rope, letting it ſink by degrees, but lay a piece of timber on the edge of the rock, for it to ſlide on, that it ſhould not be torn to pieces on the ſharp edge of the ſtones: they have another line faſtened round the man's waiſt, which he pulls, to give ſigns when he would be pull'd up, or let lower, or held ſtill, that he may remain on the place he is come to. This way the man is in great danger from the ſtones looſening by the rope, and ſo falling; which he cannot keep off: for this reaſon, he generally has on a ſailor's blue furr'd cap, which is thick, and well lined, and in ſome meaſure ſaves the blows the ſtones may give, if they are not too large; otherwiſe it often coſts him his life. Thus they often expoſe themſelves to the moſt imminent danger, merely to get a ſubſiſtence for their poor families, truſting in God's mercy and protection; to which the greateſt part of them ſeriouſly recommend themſelves before they undertake the dangerous work. There are ſome indeed who ſay there is no great danger in it, excepting that when they have not learnt the practice, or are not accuſtomed to it, the rope runs round about with them till their heads are turn'd, and they can do nothing to ſave themſelves. It is in itſelf troubleſome, and requires dexterity; yet thoſe that have learnt it make play of it; for they know eaſily how to ſwing themſelves on the line; they know how to put their feet againſt the rock, and throw themſelves ſeveral fathom out, and puſh themſelves in again to what place they will; and when the Birds ſit, they know artfully how to keep themſelves faſt on the line in the air, and to hold the pole in their hands, and with it to catch numbers flying out and coming in; and where there are holes in the rocks, and where the rocks project over like a cover, in which places the Birds gather. Here they will continue (and this is the greateſt art) to throw themſelves out, and quickly to fling themſelves in again, under the cover, to the Birds, and there to fix their feet. When one of them gets into theſe holes he looſens himſelf from the rope, which he faſtens to a ſtone, to prevent its falling out of his reach, and then he climbs about, and catches the Birds either with his hands, or with the pole, in the ſame manner as was ſaid before; and when he has kill'd as many as he thinks enough, he ties them together, and faſtens them to the ſmall line, and by a pull gives a ſign for thoſe above to draw them up. In this manner he works all day; and when he wants to go up, he gives a ſign to be drawn up, or elſe he works himſelf up, with his belt full of Birds.

Where

Where it happens that there are not people enough to hold the large rope, then the bird-man fixes a poſt in the ground, and faſtens his rope to it, and ſo ſlides down, without any help, to work in the aforeſaid manner. Some rocks are ſo formed, that one may go down into them from the fields; then they take a companion with them, and go in after the former manner, ſearching about in the holes, and take each as many as their belt will hold about their waiſt, or as they can carry in a bundle on their backs; and ſo they carry them home. There are alſo in ſome places vaſt ſteep cliffs, lying under the land, and yet more than 100 fathom above the water, which are alſo very difficult to get at. Down theſe cliffs they help one another in the manner aforeſaid, and they take a ſtrong rope with them, which they faſten here and there in the cliff, where they can, and leave it all the Summer: upon this they will run up and down, and take the Birds at their pleaſure. It is not to be deſcribed how frightful and dangerous this bird catching appears to the beholders, particularly to conſider the vaſt height, and how exceſſive ſteep theſe rocks are; and many projecting over the ſea. It appears impoſſible for any human creature to get into the holes of them, and yet more impoſſible to climb up them; and yet theſe adventurous people ſcale them. They go ſometimes where they can but juſt pitch the end of their toes, or lay hold with their fingers; yet this does not frighten them, though there is 100 fathom down, or more, to the ſea under them. This muſt be dear earned bread for theſe poor people; for which they ſo imminently hazard their lives, and many, after long practice, ſtill fall a ſacrifice themſelves.

When theſe Birds are brought home they eat part of them freſh, and part (if they get large quantities) is hung up to dry for the Winter ſeaſon. The feathers they collect together, and make merchandize of them, to great advantage; and the inhabitants get them in ſuch quantities as God pleaſes to give his bleſſing to, and ſeaſonable weather for it. The Birds do not come every where in this country, but on thoſe iſlands that are in towards the ocean, and have high rocks or cliffs; as at Norder-Oerne, Myggenas, Vaagoe, Skuoe, Dimerne, and Suderoe; and in dark weather they generally get moſt, for then the Birds ſtay in the rocks; in fine, clear, and hot ſun-ſhiny days, they are moſtly out at ſea; and toward the time of their going away they keep towards the ſea, and ſit on the cliffs by the ſea-ſide; and then the people go in boats, and catch them with their poles and nets. So far Hr. L. Debes.

After

After this general account of the Norway Birds, I propoſe now to enumerate ſeverally all thoſe ſorts that I have been able to get any ſatisfactory intelligence about; and that, as has been ſaid, in alphabetical order, according to their Norway names.

## SECT. IV.

The Aarfugl. Aarfugl, Urhane, Urogallus, or Tetrao minor, the Growſe, is ſhaped not unlike to a common cock, but black or dark brown in colour, and red about the eyes: the hen is much leſs browniſh, with black ſpots *. Their reſort is in woods and rocks, and they live upon buds of trees, the catkins of birch and the like; their fleſh is wholeſome and well-taſted, and therefore they are very much followed by the ſportſmen. In the Winter they take care of themſelves in this manner; they firſt fill their craw with as much food as it will hold, ſo that it hangs like a bag under their neck, whereby they are provided with ſomething to live upon for ſome time; then they'll drop themſelves down in the ſoft ſnow, and don't ſtay in their firſt hole, but undermine and burrow in the ſnow, ſome fathoms from it; and there they make a ſmall opening for the bill, and thus they lie warm and comfortable together: but the huntſman diſturbs them in their Winter quarters thus; he looks out for the place where he finds the ſnow appears as if it were ſunk in, and there he puſhes down a pole with a ſpread net at the end of it, into which the poor ſcared birds fly, and then are drawn up.

Winter-Quarters.

The moſt convenient time for ſhooting them is in the Spring of the year, early at ſun-riſing; for then the Bird lies on the ſmooth and flat ground, from whence it is called Leeg-Vold; for it is in the nature of it, at that ſeaſon, to be quite heedleſs, through its amorous diſpoſition, and with its eyes ſhut it lies crowing or chirping for the hen. There commonly lie three or four, or more, together; ſo that there is a good mark: if the cock falls then all the hens fly away; but if he ſtands ſtill crowing, and appears to be ſtupid, as is ſometimes the caſe, they ſhoot again: from the cock's bill at that time runs a ſtrong ſcum or froth, which the hens peck up eagerly, and that is all, according to the opinion of many, which ſerves for procreation; but others deny the laſt, and ſay they have ſeen them copulate in the ordinary manner, which appears moſt credible.

* Mas a fœmina in tantum differt, ut duorum generum hujuſmodi rerum imperito videri poſſint. Immo Geſnero etiam ipſi viſæ ſunt, ſays Franciſcus Willugbeius in Ornitholog. Lib. ii. cap. xii. §. 11. p. 125. where theſe ſort of Birds are called Tetrao Minor.

Aker-

Akerloe, a ſort of ſmall Bird, which in the Spring appears on plowed land, and picks up the worms; they look a good deal like a Heiloe, (which ſhall be hereafter noticed) but they are ſomething leſs. Akerloe.

Aker Rixe, or Vagtel Konge, are called here by ſome Ager-Hone, tho' it muſt not be taken for the Bird to which we give that name in Denmark; for ſuch ſort of Ager-Hons are not found in Norway as I know of *. It is made a good deal like a Sneppe, browniſh, with a pretty longiſh neck and legs, but of the bigneſs of a Kramsfugl; its fleſh is white, and of a delicate taſte. Aker Rixe.

When the corn is high enough for them to hide themſelves in, then they'll ſtay and hatch their young ones there; with their bill they make a kind of noiſe like ſawing or cutting ſomething hard, which is called to rixe, and from thence the Bird has its name.

Allike, Kaa, Kaye, Kaage, Monedula, the Jackdaw, ſomething like a ſmall Crow, is called alſo Cornix Garrula, becauſe they can be taught to ſpeak a few words; this Bird builds high, and gathers in great flights together: by the name they may be eaſily confounded with the following, tho' they are very different from it. Allike.

Alk; this is a Bird peculiar to this country, and for its feathers very uſeful; 'tis as big as a large duck, but narrower in the breaſt; the legs ſtand cloſer together, and the wings are leſs. They are diſtinguiſhed into two ſorts by the beak; it is on ſome longiſh and narrow; in others thick, ſhort, and bent on the back; it is black, excepting at the ends of the wings and tail, which are white, as well as all underneath; and from the eyes there goes a white ſtripe all down the neck †. They can fiſh and ſwim beyond many other, but are very weak at flying or walking, becauſe the legs are as if they were upon the rump; ſo very far behind, that it is troubleſome to move them on land; the Bird therefore totters like a drunken man: on this account is the ſaying, He is as drunk as an Alk. The wings are of no great uſe, and for that reaſon it is eaſily taken on the neſt. They always build by the ſea-ſide, on the higheſt and ſteepeſt rocks or Alk.

* P. S. I am juſt informed by a good friend, that till about twenty years ſince there never were ſeen any Ager-hons in this country; about that time they appeared like a colony, moſt likely from Bahus-Lehn in Sweden, and perhaps firſt from Skaane. Theſe fixed themſelves here and in Smaalehnene, and ſo on farther quite to Chriſtiana, and ſpread themſelves; particularly after they were as it were taken into protection, by the king's order, and had three years privileges from being deſtroyed.

† The Alk's bill is particularly deſcribed by Frid. Martens, in his Spitzbergenſke Travels, cap. ii. p. 64, & ſeq. where it appears under the name of Papagey-Taucher.

Aſtoniſhing Number.

cliffs, whither thoſe bold and ventureſome bird-catchers purſue them, and find 50, 80, or 100 pair, ſitting interchangeably upon one anothers eggs. Theſe reſemble hens eggs, and if they do not grow cold, at the expiration of 14 days the young are hatched, and in 14 days more they are fit to go to the ſea with the old ones. Their number is ſo great, that L. Debes, in his Deſcription of Faroe, p. 133, ſays they hide the ſun like a cloud, when they fly out from the rocks, and the noiſe of their wings makes a roaring in the air like a ſtorm. It is ſaid in the ſame place, that they have annually but one young one; but my obſervers inform me that they find two eggs in the neſt, and that is little enough, in regard to the great number that is annually catched and ſhot; ſo that our Creator's oeconomy is alſo here aſtoniſhing. The Alk is counted the greateſt herring-fiſher, and they will dive, according to our Strandſiddere's atteſtations, 20 fathoms deep under the water: they have ſometimes the misfortune to miſtake, and bite hold of a fiſh-hook, and ſo are drawn up from that depth as fiſh.

Various kinds of Ducks.

And we have here, beſide the well-known common tame ones, various ſorts of Wild Ducks, and theſe again are divided in certain ſpecies; ſome keep in freſh water, and don't care to go to the ſea, excepting in neceſſity. Some have ſharp-pointed bills, which differ again in colour, being black and brown; of which the laſt are ſomewhat ſmaller, and are often tufted. Both ſorts lay many eggs, more than any other Birds, namely, 20 or 25; and when the young ones are hatched, then the Drake flies away; and if, by any accident, they become motherleſs too, it has been obſerved, that others of the ſame kind have taken care of the poor forlorn young ones, as if they were their own; a good leſſon for us human creatures.

One of the broad-bill'd Wild Ducks is called Huiin or Quiin-Ænder, becauſe it whines or ſqueaks in the air, when it takes flight. The Drake is black and white, with a tuft and a white ring about his eyes upon the black; for which reaſon they are alſo called Ringoyer, and ſhe is brown or greyiſh; theſe live moſtly upon ſnails, muſcles, and the like; theſe are not ſeen longer than the Spring. Some are called Mort-Ænder or Fisk-Ænder, becauſe they live by ducking for ſmall fiſh. Their ſhape is like the former, excepting that the Drake is more ſtreaked on the back part of his neck; and there is a feather ſtanding out about a finger's length: they lay 12 or 18 eggs. There are alſo ſome called Kræk-Ænder, becauſe they ſeek for a ſort of berries called Krække-bær; or, according to the opinion of

of others, becauſe they are always making a noiſe, which ſounds like the word Kræk: they are ſomething ſmaller than the former; in colour brown, and they don't go into ſalt water; there are alſo others which are called Rod-Nakker, which differ only by a reddiſh colour round the neck. The ſo called Stock-Ænder, and by another name Hav-Æller, the Duck, which, according to the common opinion, grows on trees, are almoſt like the Tame Ducks. The Drake is dark grey, and white tufted, with a particular feather on the back of his head, about ſix inches in length. The Duck is lighter, grey and white, with a ring round her neck, a red bill, and longiſh red legs, and lays annually 12 or 16 eggs: the male and female ſit alternately; they hatch them in four weeks. The third day after the ſhell is quite opened, they are taken by the old ones to the waters, and from that time the Drake ſhuns them as if they were ſtrange ones. Theſe ſort, or the Wild Ænder, are found on the coaſt in great quantities; and this circumſtance, amongſt others, has occaſioned thoſe who have not been better informed of their breeding and origin, to imagine that they grow on trees, and have their ſource of the conchæ anatiferæ, or Angle-Tasker, of which I have treated in the former chapter, and have claſſed them with the inſects. Should any, nevertheleſs, be in doubt of this thing, it is to be found, fully examined and determined, in Gaſpari Schotti Phyſica Curioſa, Lib. ix. cap. xxii. p. 960, & ſequ. where this learned jeſuit, in a full and particular diſſertation, diveſts this fable of all appearance of truth. I ſhall only quote the concluſion, p. 976, as follows:

Stock Ænder.

Grow on trees.

Ajo I. Aves Britannicas non oriri ex arborum fructibus aut foliis, aut ex lignis navium in mare decidentibus atque in fungos aut conchulas degenerantibus. Fundamentum habeo, quod nec ratio, nec experimentum, nec auctoritas id perſuadet. Concedo equidem ex lignis putreſcentibus in mari naſci vermes, non circa Scotiam tantum, ſed alibi etiam: hanc enim unam ob cauſam portus Meſſanenſis in Sicilia, qui omnium toto orbe pulcherrimus ac ſecuriſſimus alioquin foret, cedit aliis, quod naves diutius in eo hærentes a vermibus ibidem natis exedantur. Concedo etiam in conchulis ſupradictis reperiri vermes aviformes, qui paulatim creſcant & avolent, cum id tam multi & oculati teſtes aſſerant. Nego tamen aves Britannicas, de quibus hic ſermo eſt, inde habere ortum ſuum; quoniam nullus ſupra citatorum Scriptorum id vidit, nec ullius alterius oculati teſtis atteſtatio adeſt, ſed omnes meris conjecturis agunt, vulgi opinione adducti, ut ex verbis ipſorum conſtat. Nullum enim experimentum hactenus docuit, animalcula exigua

exigua ex putrida materia generata, excreſcere in animalia tam grandia ac perfecta, qualia ſunt Britannicæ aves, de quibus agitur.

Ajo II. Aves Britannicas oriri ex ovis per incubatum, more aliorum anſerum. Probatur teſtimonio Alberti Magni, Gerhardi a Vera, & Batavorum, qui id oculis ſuis viderunt, itemque auctoritate aliorum auctorum præcedenti §. 12. & 13. citatorum, qui idem aſſerunt. Quibus accedit Ferdinandus a Corduba in Didaſcal. cap. 7. ubi ait: Multa talia pro veris vendi, vel illud argumento eſſe, quod licet plurimi ſcribant, aves Berneſtas nomine in Hebridibus inſulis & Hybernia ex fructibus aut foliis arborum in mare deciduis generari, nihilominus id figmentum eſſe; cum Hollandi 1569, ſcripto teſtati ſint, ſe circa novam Zemblam in has aviculas, ova ſua foventes, incidiſſe.

Ajo III. Perſuaſionem vulgi & Auctorum contrariæ ſententiæ, inde ortam, quod annis ſingulis innumerabilem pene multitudinem ejuſmodi avium circa Britannicas inſulas deprehenderint, nec tamen ſciverint ubi orirentur, aut unde venirent; putaverintque proinde, animalcula illa alata conchulis aut materiis putreſcentibus incluſa, excreſcere in anſeres, ut optime notavit Cluſius & Deuſingius.

## SECT. V.

Berg Ugle. The Berg Ugle, or the Ugle, with the Baſiar, Boefiær, a ſmall Sea-bird, of the ſame kind, and not larger than a Thruſh, but otherwiſe looking like the Alk, or Razor-bill, in colour, legs, and bill, are common alſo here. They live upon ſmall herrings, and are never ſeen but in the midſt of Winter, and a few in the Spring, if there comes a ſtorm of weſterly wind; and therefore its native place and manner of breeding is unknown to me.

Bogfincke. The Bogfincke, or Brambling, a well-known ſmall Land Bird, is very pretty, of a dark colour, variegated with red, white, and grey ſpots; the bill is ſhort and thick; they are here but ſcarce to be ſeen, of the Fincker, or Finch kind in general. Jacob Klein reckons, in his lately publiſhed Hiſtor. Avium, p. 96, ſeventeen ſorts, which differ in colour, and other reſpects.

Brokfugl. See Heilo.

Bruuſhane. The Bruuſhane, or Ruffe, is ſomething leſs than a Pigeon; it takes its name from loving always to buz, and with his bill he fights with his own kind, and then raiſes his long feathers round his neck, that they ſtand like a ruff. The female of this kind is called the Reeve.

Dom-

Dom-Herre, or Dom-Pap, the Coccothraus, perhaps ſo called in popiſh times for their melodious voice, reſembling an organ, though not loud enough to fill the choir of a cathedral, where the canons ſing their Horæ. Some call them Coccothrauſtes ſanguinea. Of the ſame family there are many ſorts in other places, which I do not know any thing of here. Its body is beautifully variegated, red, black, and white on the wings; and grey on the back; the hen is only of a blue-grey: the ſcarceſt are thoſe that are green, with red tufts of feathers on the head. Dom-Herre.

The Droſſel Turdus, the Thruſh, which is called here Troſt, and by a common name, which comprehends many ſpecies, Krams, or Krametsfugl; the difference in the Norway Droſſelaes, from the Daniſh, conſiſts, as far as I can find, only in this, that ſome are greyiſh, with white feathers under the breaſt, ſome of a dark brown, and ſome quite black. Theſe are called Soelſorter. Some are dark grey, with a white ring round the neck. Theſe are called Ringe Troſt, the Ring Owzel. Jac. Klein, preferable to other writers, has given himſelf a particular deal of trouble to find out the characteriſtick marks of each kind of Bird in his generation; and reckons, L. C. p, 65, & ſeq. not leſs than thirty-ſix diverſe ſorts of Thruſhes; yet I am of opinion that one may in this, as in other things, multiply ſpecies without occaſion, and thereby confuſe one's ideas, inſtead of clearing up or eſtabliſhing them; for between ſome of theſe the difference is ſo ſmall, that I look upon it to be rather accidental than ſpecifick. In the Autumn here are a great many Kramsfugl, particularly when there is a good ſeaſon of berries, which, with other products of foreſts, are known to be their food. Droſſel, or Krametsfugl.

The Due, or Pigeons, tame, and ſeveral others, are frequent here, but Turtle-doves are not found with us. We have Wood Pigeons, and particularly about the rocks, in conſiderable numbers. Willughby ſays, Ornitholog. Lib. ii. p. 136, that they are ſomething larger than common Pigeons, which they otherwiſe are very like: in this country it is the contrary, for they are rather leſs. On the iſlands at the ſea-ſide in Ryefylke there are found a ſort of wild Pigeons, which are like the tame, excepting that they are all of one colour, with blue ſhining feathers on the neck. They build their neſt in the cracks of rocks, and are not ſo ſhy as the Wood Pigeons. Due.

## SECT. VI.

Edderfugl. The Wild Duck, called Edder, Ædder, or contracted by Ærfugl, and by Wormio, in Muſeo, p. 320, Anas plumis molliſſimis, is found here along the coaſt, as well as in Iceland, Groenland, Faroe *, and elſewhere, in great quantities. The feathers of its breaſt, which are known far and near by the name of Eider-Dun, make annually a good livelihood to people in many places. I think this Bird deſerves an exact deſcription, eſpecially as they are not known any where elſe than in the North Sea.

In ſhape and ſize it keeps a medium betwixt the Gooſe and the Duck, ſo that one may, with equal reaſon, call it a ſmall Wild Gooſe, or a large Wild Duck. The Cock on the upper part is black, mix'd with dark green, which, about the neck, is ſomething lighter; under the eyes white, mix'd with light green; the breaſt is black; under the belly and wings it is of a light grey; on the tail, which is but ſmall, it is of a dark green and ſhining hue. On Faroe, according to L. Debes, the cocks are ſometimes white, and, when they are young, are like the hens, which are ſomewhat leſs than their mates, and are afterwards all over brown and grey mixt. The bill and feet are of the Gooſe kind, but of a duſky yellowiſh colour, and in the hens ſomething darker. They dive under water like Ducks, but much deeper: they will go to ten or twelve fathom deep, and they live, like other Sea-Birds, upon fiſh, ſhells, and ſea-weeds. In the Winter they are almoſt always on the ocean, and they ſeek the coaſt in the Spring in large numbers, to make their neſts in the cliffs, and on ſmall iſlands, either among ſtones, or among the tufts of buſhes, and large ſea-plants. They lay five, or, at moſt, ſix eggs, of a green colour, and as large as a Gooſe-egg, in ſhape ſomewhat longiſh †.

If

* This agrees with what Buchanan writes, de Rebus Scoticis, Lib. i. of the Scotch Bird he calls Calca; of which alſo Robert. Sibald. in Hiſt. Animal. Scot. Lib. ii. p. 21. relates the ſame of this Bird and its feathers. It is not ſeen before the Spring, and it is thought that this Bird, along with a great many other Sea-fowls, go to other places in the Winter: but whether they go, according to the opinion of ſome, to America, I will not determine. Whilſt I am writing of this, a correſpondent of mine at Sundmær acquaints me, that they have been nevertheleſs ſeen there in Winter on the out-iſlands, in the ocean, living upon what they find among the ſand, that the waves throw up from the bottom. Concerning their place of retreat, I can find no account to be depended upon.

† Mr. Anderſon ſays, in his Deſcription of Iceland, p. m. 44. that they have told him that theſe Birds lay a vaſt many eggs. If a ſtick of half an ell's length be put in the middle of the neſt, which ſometimes is done, (becauſe the eggs are much eſteemed) the female ſtill continues laying her eggs more than her cuſtom, and does not leave off till the top of the ſtick is covered, that ſhe may lay upon them; whereby

If the firſt five eggs are ſtole away, then the Bird lays again but only three, and in another neſt; if theſe are loſt, then ſhe lays one more. Four weeks the mother ſits alone on the eggs, and the cock ſtands watching underneath in the water; ſo that if any human creature or beaſt of prey approaches, he gives her notice, by crying hu hu, and then ſhe covers her eggs with moſs and down, which ſhe keeps ready prepared, and comes down to her mate on the water; but he does not receive her very kindly; and if her eggs are loſt by any accident, he gives her many blows with his wings, which ſhe muſt take patiently; and after this he entirely deſerts her, and ſhe is obliged to join the flock of her kind, under the ſame diſgrace. A few days after the young ones are hatch'd they are taken by the mother to the ſea, and are not forſaken even in the greateſt diſtreſs: ſhe has been ſeen, in time of danger, to take her young ones on her back, to ſwim the better away, when they could not come after her. One of my correſpondents has ſeen, that as the Ravens and Crows hunt out for theſe Birds neſts, to ſuck out their eggs, or eat the young ones, it has made them ſometimes build half a mile farther up in the country, that they might find a better hiding-place for their neſt; and then, when the young ones are to go to the ſea with their mother, ſhe lays herſelf down, for them to climb on her back, and carries them away by an even flight. Severe mate.

Tho' it be not ſuffered to deſtroy theſe Birds, on account of their fine down, but only to gather it off from the neſt, yet they are too often killed by the inconſiderate; but the feathers and down which is plucked off the dead Birds are not near ſo good as that ſhe pulls off herſelf from her breaſt. This ſhe does the laſt eight days ſhe ſits, to make the young ones a ſoft and warm bed. The dead Birds down is greaſy, and ſubject to decay, and is not near ſo light as the down of the neſt, when it is cleanſed from the ſtalks of herbs, and other mixtures. It is ſold, when pure, for two rixdollars per pound, and is a good livelihood to many of the people who live about the coaſts; for it is ſo light, warm, ſoft, and ready to ſpread itſelf, that two handfuls ſqueezed together is enough to fill a down quilt*. Edder-down.

That this Edder-down is unwholſome, and particularly, that it gives the epileptic ſickneſs, is contradicted by Th. Bartholin. in Medicina Danor. domeſtica, p. 65: Neque vanus nonnullorum

whereby ſhe becomes quite faint and low. This account ſeems not right, according to all experience, on this coaſt, where they generally find but five, ſeldom the ſixth, in the neſt.

* A covering like a feather-bed, which they uſe in that country inſtead of quilts and blankets.

rumor

rumor nos terrere debet, epilepticos inſultus ex uſu harum plumarum timentium, quod periculum necdum ullus, quod ſciam, incurrit. The Edder's, as well as many other Strand Birds eggs, are brought in here to market, by thoſe farmers that live near Bergen; and they are ſaid to be very good and well-taſted: but on the contrary, the fleſh taſtes fiſhy; ſo that none of theſe Birds are eat, except by the poor, that ſacrifice taſte to neceſſity; yet one may mend the taſte in ſome meaſure, if they are parboiled in vinegar, or ſoaked in vinegar before they are roaſted.

Egde. The Egde, Nightingale, is a ſmall Land Bird, ſomething like a Lark: it is peculiar in this; that in Summer it ſings all night long without intermiſſion.

Elve-Konge. The Elve-Konge, or Owzel, is ſo called, becauſe it always haunts rivers, pleaſing itſelf with fluttering over running water, and jumping from one ſtone to another: it's make is ſomething like a Thruſh, black, and with a white ring round his neck.

Erle. The Erle, or Ring Erle, is ſomething like the former, but of a blue grey on the back, a black head, and a little white on the ſides; the hen is more grey: it is only ſeen in the Summer, and is ſaid to lie in a ſtate of inſenſibility all the Winter.

## SECT. VII.

Falk. The Falk, or Falcon, which J. Klein, p. 47, diſtinguiſhes into 27 different ſorts, are found the fartheſt north, of the beſt and moſt uſeful kinds for hawking: I have nothing to do with thoſe which are annually exported from Iceland, and not without a conſiderable charge; and then are ſent far about to foreign courts. I ſhall only obſerve, that here in Norway, particularly in Oſterdalen; and alſo in the dioceſe of Chriſtianſand, and particularly at Jedderen, there is found extraordinary good Falcons for the ſport; they are grey and white, and are of ſeveral kinds, large and ſmall: to catch them we generally uſed to have people come from Germany and the Netherlands annually. Theſe expert Falconers ſeparate themſelves about the rocks, and generally ſtay about a month, or ſomething longer, that they may each of them get a booty. They catch but few, from which we may judge of their value, which will anſwer ſo long a journey *. They catch them in nets, under which they put a pigeon for a bait. Here by the ſea ſide, particularly at Sundmoer, are ſeen what we call Fiſhing-Falcons: they have their principal living on the water,

* This Falcon-catching is farmed to the Brabant people, by a certain family to whom his majeſty has granted it.

but

but deſtroy alſo on the rocks many of the Birds that build there.

The Fiær-Kurv, or Fiære-Muus, called alſo Strand-Sneppe, and Strand-Ærle, is a ſmall mouſe-grey Bird, living about the coaſts, as big as a ſmall Thruſh, with a long bill and legs; it builds its neſt in the cracks of the rocks along the coaſt, and lays ſeven or eight grey ſpotted eggs; it lives on worms and weeds. Sometimes theſe fly in ſuch great flocks, that one may kill at one ſhoot 40 or 50. On the water they'll ſit ſo ſecure, that one may row within a fathom of them: their fleſh is not deſpicable in taſte. Fiær-Kurv.

The Flagger-Muus or Aftenbalke, the Batt, which is called here Skindvænge, is very common; it is put by ſome among Quadrupedes, inſtead of Birds. Flagger-Muus.

Flag-Sperte. See Sperte.

The Foſſefald, or Water-Wagtail, is a little black and white Bird, that ſeeks his habitation near cataracts, or water-falls, which they do not leave even in the Winter. J. Ramus gives an account, p. 246, that they burn and powder theſe Birds for a remedy for horſes in many diſorders. Foſſefald.

The Fugle-Konge, Regulus, or Wren, is the ſmalleſt Bird that we know of in this country: 'tis brown and yellowiſh under the belly; the feathers look as if they were wool, or as if it was covered with cloth: it lives chiefly about ſtone walls *, and in barns. Of this Bird 'tis ſaid, that it ſeats itſelf on the back of the Eagle, and ſo flies up with him ſo high as it otherwiſe could not poſſibly ſoar. From thence, perhaps, he has the odd name of King of the Birds; for he ſeems to diſpute the title with the Eagle himſelf, who is properly the king of Birds. Our farmers call the Wren Peter Nonſmad, that is, after dinner meat; becauſe he is ſeldom ſeen in the forenoon. Fugle-Konge.

The Gaas, or Gooſe. The Tame are common here as in other places. Of Wild Geeſe we have two ſorts, particularly in Summer time, by the ſea ſide. The firſt, from their colour, are called Graa-Giæs, Grey Gooſe; alſo Trappe-Giæs, and of ſome alſo Rad-Giæs, becauſe they hold a wonderful kind of counſel in their flight; of which hereafter. They are only in the Summer in Nordland, the furthermoſt part of Tronheim's dioceſe; and are ſeen to fly by here, towards the north, about Whitſuntide: when they are weary in their journey, and light upon the cliffs to Geeſe. Graa-Giæs.

* Theſe ſort of walls are uſed inſtead of hedges, and are large pebbles, and other ſtones, laid looſe one a-top of the other.

reſt, ſome may be ſhot; ſome alſo, by fogs or bad weather, are bewildered; and others from faintneſs, or ſome other accident, are left behind till Winter*, when the flocks return from Nordland to France, where ſome people are of opinion that they winter; tho' I won't alledge it for a certainty: for as to theſe ſort of Birds of paſſage, their breeding and other circumſtances are not rightly known to us in theſe parts.

Strange flight. Thoſe that are catched and ſhot here are fat and well-taſted: the moſt remarkable thing with reſpect to theſe Graa-Giæs is the regularity and order they keep in their annual flights and peregrinations both hither and back again. This has been confirmed by many witneſſes. Each flock conſiſts of 30, 40, or more; and they fly partly in two lines; and toward the hindermoſt end they ſtand pretty far from one another, but the foremoſt go cloſe together, and form a pyramid; ſo that they cut the air to make it eaſy for the reſt: but as the foremoſt are ſooneſt tired, it is obſerved, from time to time, that the three foremoſt at the point retire behind, and other three come forwards; and ſo they continue to cut the air, taking turns for the foremoſt place; and thus alternately, a whole or half a day, they go on in regular order, and without turning out of their direct line, unleſs when one grows tired, and then, perhaps, it muſt ſtay behind. This is certainly a ſingular thing in natural hiſtory, and may give mankind a good leſſon how to help one another in ſociety. Something of this kind is affirmed concerning the Deer, when they in droves paſs a river.

Fager-Gaas. Another ſort which ſtay longer with us, is what we call the Fager-Giæs; they are a clean and pretty Gooſe; they have a white ring round their neck: they are called alſo Urgiæs, becauſe they live in Urer, or heaps of ſtones, under the rocks along the ſhore. They are bigger than a Duck, but leſs than a Gooſe: the general colour is a mixture of white, blue, brown and black; they are greeniſh on the head, and the bill and feet are red; the fleſh is not ſo good as that of the former: we know not where they ſpend their Winter; they come here in the beginning of April, and are not ſeen after Michaelmas-day.

When the eggs are taken or deſtroyed, the cock beats the hen with his wings, and makes her cry diſmally. In the ſubterranean holes, where they lay their eggs, there is two openings;

* A friend gives me an account, that the Graa-Gaaſer breeds alſo on the iſlands near the ocean in Rycfylke, tho' not in any great number. In Jedderen is a water where thoſe Geeſe which loſe their feathers, or that could not follow the flock, ſtay all the Summer, and with a little trouble may be catched in great quantities.

ſo

ſo that if the one hole is not ſtopped up, it is in vain to look for the Bird at the other.

The Gooſe in this kind is viſibly leſs than the Gander, and has got the ring about her neck, which makes the Gander moſt ſightly.

The Giertrudsfugl, or Gertrudes-Bird, is black, with ſome red on the neck, near the head. It lives in wood, and is called by ſome Ulykkes-Bird, becauſe it is commonly looked upon as ominous, and of bad foreboding. In theſe things the commonality in former times had great belief. Giertruds-fugl.

The Glente, or Kite, is a known Bird of prey, which particularly keeps to houſes and yards, and kills the Chickens. Glente.

The Goul, or Gagl, is a middle kind of Bird, belonging to the water: it is ſomething like a large Wild Duck, but much fatter and delicater in fleſh, and is beſt roaſted. In June they come in flocks, like the Wild Geeſe, along the country going north; they are eaſily ſhot, becauſe they do not turn, but keep a direct line, and fly low, not much above the water. In Snorro Sturleſen, p. 229, it is ſaid, A Gagl for a Gaas is but bad payment. Goul.

The Gog, otherwiſe, for his noiſe, called the Hukkuk, the Cuckow, is ſhaped nearly like a Hawk; it is ſomething leſs, and of a blue-grey. It is ſaid that they are lazy, and muſt have a ſmall Bird always in company with them, that brings them their victuals: it is pretended by ſome, that the Cuckow the following year becomes a Kite, juſt mentioned, and falls firſt of all upon his benefactor; and from thence it is called the ungrateful Cuckow*. They are not ſeen farther north than Saltens Fogderie. Gog.

## SECT. IX.

The Hav-Aare, is ſhaped like a Duck, but is ſomething larger, and the bill is ſhorter; it is quite black, excepting ſome white feathers at the end of the wings, which look pretty. They dive deep for their food, and they are difficult to ſhoot at. They lay ten or twelve eggs, and take turns with their mates to ſit on them. Hav-Aare.

The Hav-Heſt, is a Sea-Bird, not larger than a Moor-hen: it is ſhort and thick, with ſmall wings, and feet like a Gooſe; a ſmall bill, and high cheſt, of a grey colour. They ſnort like a Hav-Heſt.

* Againſt this common ill report, which particularly Plinius, Lib. x. cap. 9. fol. m. 80, has brought upon the Cuckow: it is cleared by Jo. Heinr. Zorn, in his Petino-Theologie, P. ii. c. 13. §. 13. p. 716. who ſays, the poor Bird is done injuſtice: who has ſeen it? Nay, he is an unarmed Bird, and has neither claws nor bill to do it with.

horſe

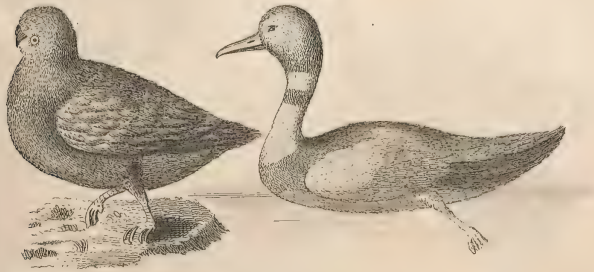
horſe when he fetches breath; from whence the Bird has the name; as well as that its motion on the water reſembles the trotting of that animal, with heaving, and violent puſhing; ſo that when they appear in large flocks, they make the ſea roar even in ſtill weather. On land no body has ever ſeen them, and they do not come nearer than half a ſcore † miles; ſo that they are only ſeen by the fiſhermen that go out to fiſh for turbut on the main; though in ſhallow water theſe Birds come about the boats in cluſters, to get the intrails that are thrown over. If they ſtrike at any of them with a ſtick or a ſtone, that they fall or are ſtunn'd, then the others gather about the Bird that is hurt, and never leave off pecking him till he revives: but that he ſhould revive, as pretended, though quite mangled, is a mere fiſherman's fable.

I have never found ſo much as one of this Hav-Heſt among other Birds, in any other writers; and therefore the drawing ſent me by Mr. Hans Strom, chaplain to the pariſh of Borgens on Sundmoer, is certainly the more worthy to be introduced: but I have this to obſerve on the occaſion, that the thick and round head in the drawing is too much like an Owl, and ſhould, by a more exact drawing, rather approach the likeneſs of a cuckow's head, but broader.

Hav-Sule. The Hav-Sule, a large Sea-bird, which ſomewhat reſembles a Gooſe: the head and neck are rather like thoſe of a Stork, excepting that the bill is ſhorter and thicker, and is yellowiſh; the legs are long; a-croſs the back and wings the colour is a light blue; the breaſt and long neck are white; towards the head it is green, mix'd with black, and on the top there is a red comb: the tail and wings are both diſtinguiſhed by ſome white feathers at the ends, and are large in proportion to the body: when the wings are ſpread from the end of one to the other they meaſure ſix feet. This Bird is eatable either roaſted or ſalted: the Scots call it Gentelman. It is a Bird of paſſage, or of the wandering unſettled ſort. It is not ſeen in this country before the latter end of January, or beginning of February, when the herring-fiſhing begins, and then it ſerves for a ſign to give notice of the ſeaſon. They do not come nearer land than within half a mile; thus the farmer obſerves when the fiſh ſeek the narrow and ſhallow waters. At Eaſter theſe Birds are not ſeen any more, therefore I cannot ſay much about their breeding. They are ſo ſtupid, that by laying a few herrings upon a floating board, they may be inticed to the boat, and killed with the oar.

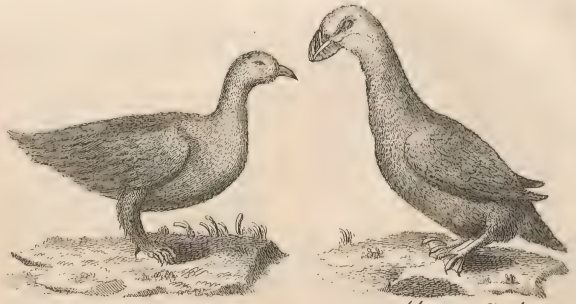
† Sixty Engliſh Miles.

The



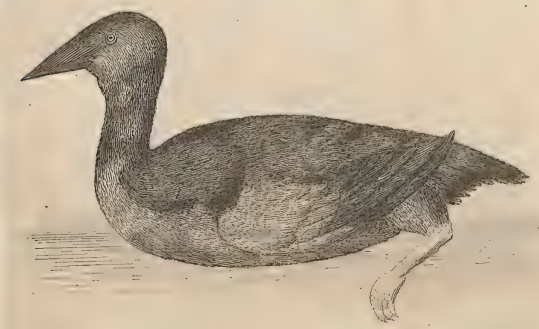
The Haar Hest

The Ring Goose or Hagar Gaas

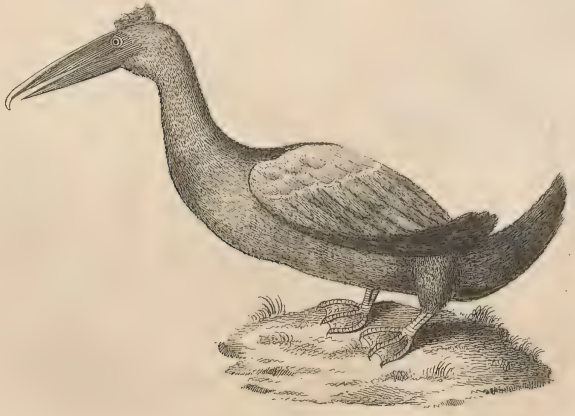


The Grouse

The Alk or Auk



The Imber or great northern Diver



The Haar Jule.

The Heire, the Heron, Herodias, Ardea vel Ardua, quod alte volet, because it flies high, says J. Klein, Hist. Av. p. 122, where he distinguishes them into fourteen sorts. We shall only take notice of the Norvegian Heron: it is the large blue Heron, a considerable Bird, whose body is like an Eagle's, the neck, bill, and legs like those of a Stork, excepting that the feet resemble those of a Goose, and on their heads they have a tuft of feathers: they lay three grey spotted eggs, of the size of a Goose-egg, and shape of a Moor-hen's: they build their nest in the highest trees, or in the cracks of the steepest rocks: the male and female change turns to sit upon the eggs, which are hatched in three weeks: they do the same in bringing up the young, in three more; and then they can feed themselves. They do not only seek their food in fresh water lakes and marshes, but also along the sea-coast, where, with their long legs, neck, and bill, they shew the same readiness as the Stork, to catch all crawling and water insects, that are not larger than what they can swallow down their narrow throats. The Heron has only one strait gut, which distinguishes it from other Birds. Ardea id habet ab omnibus avibus diversum, quod intestinum cæcum unicum & simplex obtineant singulæ, cum aliæ aves geminum nactæ sint, according to J. Klein, L. C. Hence it comes to pass, that all my correspondents unanimously assure me that a Heron may eat a Snake or an Eel three times over, which is hardly swallowed before one sees the head or body pass out again from the Bird's fundament, and then immediately the Bird turns about, and swallows it a second or a third time, before he will relinquish it. Its long legs are a great help to it to get its provisions: on these legs are a very few fine hairs, which play softly in the water; and that motion, it is said, entices the fish, who are not aware of the devouring beak above. Heire.

The Heiloe, called also Myreloe, because they live chiefly in ant-hills, or in broom-fields, differs from the Akerloe (which, on the contrary, seeks the plough'd land) chiefly in size, which is visibly superior; on the back it is green, and it is variegated under the breast with black and white spots: its flesh is delicate, much like the Thrush kind: they are Birds of passage, and towards the Winter they assemble together in large flocks, and so fly away. Some are of opinion that they stay here all the year, hiding themselves in the high rocks; but this is uncertain. Heiloe.

The Horse-Gog, or Rosgauke, so called perhaps because they live in cracks of rocks, or among great heaps of stones, from whence the ermin animal has the Norvegian name. The Horse-Gogen is about as large as a Wood-Pigeon; its note is not at Horse-gog.

all like the other Gogs, or Cuckows, but reſembles the bleating of a Goat, and is therefore by ſome called Jord-Geed, or Ground Goat: it is moſt heard in the night. Some call it alſo the Fog-Bird, becauſe it is oftneſt ſeen in miſty weather.

Hoeg. The Hoeg, or Hawk, a well-known and hurtful Bird of prey: there are three ſorts of them in this country; the largeſt is the Goſ-Hawk, which is ſtrip'd with green, and ſeems nearly related to the Falcon: this lives upon Growſe, Chickens, and Pigeons. It will not meddle with a dead carcaſe, as if it were of a more noble kind than other Birds of prey. They often keep about the freſh water, and watch to catch the fiſh that come within their reach. Another ſort, are leſs and of a brown colour, called Spurre-Hoge, becauſe they do not carry away any thing but ſmall Birds; and there is ſtill a leſſer ſort of the ſame colour, called Muſe-Hoge, becauſe they, like the Owl, devour the ground or wood-mice. They hover in the air till the mouſe comes in their way, and then drop down at once upon it.

Hons. The Hons: the cocks and hens in general of this ſpecies, which is one of the moſt extenſive among the Bird kind, are found here of every ſort as in Denmark or Germany, the Peacock not excepted. Pheaſants are the only kind which I do not remember to have ſeen here, though I don't doubt but that they might be bred in Norway, as well as in other places, with expenſive regulations *.

That the great India Hons, the Turkey kind, commonly call'd Kalkunske, but more properly Calecutiske Hons, ſhould thrive here as well as in warmer countries, one would not believe, if experience did not convince us; yet it is true, that they do not grow quite ſo large as in other places.

Of Agger-Hons I have already treated.

* His Excellency Count Rantzau, our former Stadtholder, in his time kept Pheaſants; but with what ſucceſs, or whether they left behind them any young, I have not learnt.

CHAP.

# CHAPTER IV.

## CONTINUATION of BIRDS.

SECT. I. *Of the Francolin, the Lumme, and others.* SECT. II. *Of the Black-cap, the Larke, the Lumme, the Pope, and others.* SECT. III. *Of Gulls of ſeveral kinds; of the Eagle, and many others.* SECT. IV. *Of the Raven, Cormorant, and others.* SECT. V. *Of the Lapwing, the Magpye, and others.* SECT. VI. *Of the Starling, the Stork and others.* SECT. VII. *Of the Cock of the Wood, and others.* SECT. VIII. *Of the Quail, the Owl, and others.*

### SECT. I.

JERPE, or, as ſome expreſs it, Hierpe, the Francolin, is an excellent Land-Bird: it ſerves the Norvegians inſtead of Pheaſant and Moor-game; and is called by ſome the Norvegian Ager-Hone, and differs very little from the Bird of that name in Denmark, but it is ſomething leſs, and almoſt like a Pigeon or Partridge; but in feathers and colour it is more like the Wood-gam; it is variegated in ſtripes. For its white, ſound and tender fleſh, and its delicious taſte, I prefer it to all kind of Fowl I know of. The fowler entices it to him by blowing in a pipe, that ſounds like the voice of its mate. In the dioceſe of Aggerſhuus and Tronhiem, where they are in great numbers, they don't prefer any thing to the Jerpe roaſted. On Kolens mountains they are in abundance; and, according to Schefferi's account, in ſuch vaſt numbers as cannot be counted. Willughby, who is not in the wrong by counting them a ſpecies of Ager-Hons, ſays, that the Italians, who have them from the Sicilian and other high mountains, call them Francolini, quaſi Franci, i. e. Liberi ſeu immunes; becauſe they know theſe Birds are a ſort of prohibited game, being reſerved for the nobility only. And again it ſtands in the ſame claſs, namely Ornithologiæ, Lib. II. §. ii. p. 125. Hæc avis vel eadem eſt noſtræ Lagopodi alteri, Regdame dictæ, vel ei affinis. Differt ſaltem, quod caput habeat criſtatum. Bellonii autem Attagen criſta deſtituta eſt. Ego ſane eandem crederem, niſi locus obſtaret. Noſtra enim juga montium altiſſimorum ſeptentrionalium incolit, cum Aldrovandi Attagen in Siciliæ Regionis Jerpe.

Regionis calidæ montibus ſatis abunde reperiatur. Verum nullus dubito, quin avis illa, quam Bellonius & Scaliger hoc nomine intelligunt, in Alpibus quippe Pyrenæis & Arvernienſibus montibus degens, quamque Bellonius ad plana deſcendere negat, lagopodi noſtræ omnino eadem ſit. Et forte etiam Aldrovandi non diverſa fuerit, cum utrique tum Bellonianæ avi, tum Aldrovandinæ Francoloni nomen commune ſit, & Aldrovandi attagenem ſuam monticolam eſſe ſcribit. Nec refert, quod Siciliæ, ubi invenitur, regio calida ſit, montes enim Siciliæ, præſertim Ætna adeo frigidus eſt, ut per maximam æſtatis partem nivibus ſit opertus, &c. Caro hujus avis laudatiſſima eſt, facilis concoctionis, nutrimenti multi & optimi, unde & primum dignitatis gradum apud veteres obtinuit.

Imber. The Imber, Imbrim, Ember, or the great Northern Diver, is a pretty large Sea-Bird, a little bigger than a Gooſe: it has a long Neck, the upper part black, as well as the bill and feet; but from the breaſt downwards 'tis white: there are alſo ſome white feathers at the extremity of the wings and tail. The wings are ſo ſhort, that they can hardly raiſe themſelves with them; and the legs ſtand ſo far backwards, that they are not ſo fit to walk with, as to paddle themſelves along the water. Hence ariſes that ſtrange account in which every body agrees, that the Immeren is never ſeen to come aſhore, excepting in the week before Chriſtmas; from whence the fourth Sunday in Advent is called by the people in general Immer, or, according to their way of expreſſing, Ommer-Sondag. On enquiry, how they find place and opportunity to hatch their young, I have been informed they lay but two eggs, which is very likely; for one never ſees more than two young ones with them. Under their wings in their body there are two pretty deep holes, big enough to put one's fiſt in: in each of theſe they hide an egg, and hatch the young ones there, as perfect, and with leſs trouble, than others do on ſhore. Relata refero, ſed conſtanter & a plurimis relata. Hr. Lucas Debes, whom I conſider as a pretty cautious writer, does not look upon this to be improbable, where he, in his Deſcription of Faroernes, p. 128, & ſequ. treats of that Bird. He obſerves that the Immeren, according to the opinion of ſome, is not the Iſfuglen or Halcedo, which Franzius, in his Hiſtor. animalium ſacra, deſcribes to be of quite a different form, and indeed a little Bird. It is ſaid the young ones are eaſily enticed aſhore, and killed; but the old ones, which are moſt valued on account of their fine feathers and down, know very well how to guard themſelves againſt Gun-ſhot

for

for they duck quick under water, and then come up again in a moment. Several ſhot may be diſcharged to the place where they are expected to appear, but ſeldom with ſucceſs. Thoſe that will kill them muſt aim at their hinder parts, that the ſhot may go in under the feathers; for they grow ſo thick, and are ſo very ſoft, that the ſhot is damped, and loſes its force, if they are ſhot in the fore-parts *. As far as I yet have found, this wonderful Bird ſeems to be quite unknown in foreign parts; for neither Aldrovandus Geſnerus, Willughbeius, Zornius, or Klein, ſay any thing of it: they are likewiſe unknown to many of our Norvegian writers.

Jo-Fugl, Jo-Tyv, or Jo-Thief, becauſe he robs other Birds, is called alſo Kive. It is in ſhape like a Strand-Maage, tho' of a darker colour; and is an enemy to thoſe Birds, tho' not a very dangerous one, as may be concluded; for he only ſtrives, in his purſuit after them, to get their prey from them, which he is too lazy to catch for himſelf; or if he can't get that, he'll take the other Birds dung, from whence the Dutch call him Strunt-Jager. As ſoon as the other drops it, 'tis inſtantly catched up by the Jo-Fuglen, and with that he is ſatisfied without any further demand: this I am aſſured of by many that have obſerved it. The Jo-Fuglen appears in Norway early in the Spring, and is not ſeen after Autumn. Its eggs are like the Maagen's, but ſomething darker. See Frid. Martens Spitzbergenske Travels, c. ii. p. 63. The Jo-Fugl.

The Irisk is a pretty little ſinging Bird, very well known: 'tis found in Oplandet, but not the right genuine ſort, as has been obſerved by the beſt judges. Near Bergen there is a ſort of Bird called Knotter, which is different from the Irisk only in the note; in other reſpects they are quite alike. Irisk.

## SECT. II.

The Kiæld is a Land-Bird, tho' of that ſort that lives always about the ſea coaſt, and it never goes on the water but to ſave itſelf by ducking a little while under water. It is in ſize and ſhape much like a Pigeon, with a long narrow red bill, and red Kiæld.

* Being thus ſhot-proof, perhaps is the origin of this Bird's Iceland name, which is Himbryne, as if armed with a heavenly coat of mail: otherwiſe there is aſcribed another origin to the name, tho' not ſo juſt, when it is ſaid in Muſeo Wormiano, p. 303. Mergus maximus Farrenſis, Ferroenſibus Helbrimer, Iſlandis Himbryne, quaſi lorica cœleſti induta. Ejus etymologiæ rationes ita reddidit D. Stephanus Olavius: Himin cœlum loricam vero Brynia ſignificat, juxta illud poetæ: Brynia gefur ey feigufior. i. e. Lorica non dat morti vicinis vitam. Ratio nominis a colore, ut exiſtimo, petita eſt. - - - Voluerunt Iſlandi hac nominis impoſitione ſignificare, aves haſce pulcherrima colorum varietate & diſtinctione, uſque adeo ornatas eſſe, ut dici poſſint cœleſtem quandam loricam induiſſe.

legs: his upper part is black, and he is white under the belly and wings. The male and female take their turns to hatch their young, which is done in 14 days, on the bare cliff; the eggs are ſtreaked; they live on ſhell-fiſh and ſea-weeds; they come in the Spring, and are not ſeen after Michaelmas-day. The farmers ſay they fly over to Scotland.

Kiod-Meiſe. The Kiod-Meiſe, or Muſvit, the Black-cap, called by ſome Tallow-Ox, is one of the ſmalleſt Land-Birds; 'tis almoſt like the Wren; the body is black and yellow, and 'tis white under the belly, with a black cap on his head. They keep to the houſes, but are hated and perſecuted; for, according to his name, he is ſuch a lover of meat, that he watches every opening or hole to get into the farmer's pantry, and falls upon the meat, and will eat his way into it like a mouſe: even when the meat hangs up to be ſmoaked, they can hardly preſerve it from theſe Birds; they are catched like mice, in a trap.

Krage. The Krage, Kraako, a well-known black and grey Bird of prey: it lives upon carrion, and ſuch other foul food. It is ſaid to warn other Birds of their purſuers; for it ſmells gunpowder at a diſtance, and follows the bird-ſhooters with its ſhrieks, and often fruſtrates their hopes. The fox is their moſt dangerous enemy, for he ſteals upon them when they are aſleep on the ground.

On the ſea coaſt theſe Kragers live upon ſmall fiſh and worms, common along the ſhore, and particularly on muſcles; but they can't open the ſhells, otherwiſe than by flying high with them, and dropping them on a rock to break them in pieces.

The Krams-fugl. See Droſſel.

Krykkie. The Krykkie, is a Sea-bird, much like a Maage, with a yellow crooked bill, and ſmall red feet; under the belly it is white, and above it is grey, with a brown ſtreak along the back: it comes with the Summer, and takes its leave in Autumn.

Langivie. The Langivie, Lomgivie, or Lomvifie; for the name of theſe and other Birds differ greatly, according to places, and their dialect. Theſe, which are of the Gooſe kind, have black running a-croſs the back and wings, but they are white under the belly: they are called otherwiſe, by way of excellence, Stor-fuglen, becauſe they are amongſt the largeſt of the kind of the Sea-birds, and fly high, to lay their eggs on thoſe rocks by the ſide of the ocean in Nordland, particularly at Trænen and Væroe, where they afford a comfortable maintenance to the inhabitants, though got with a great deal of trouble and danger, by climbing thoſe ſteep precipices after them. Willughbeius ſays, L. iii. p. 244,

that

that they are companions of the Owks and others, but are ſimpler, and eaſier catch'd. The hen lays but one egg at a time, ſhe hatches it in four weeks, and in all that time does not ſtir from it: ſhe is fed by the cock till the young one is three weeks old, and then the mother takes it with her to the ocean on her back. Of theſe kind are frequently found ſeveral hundreds in a place, lying ſo cloſe together, that the rock is covered with them. When the mother feeds her young, then they ſit up backwards, and ſhe ſtretches her neck under her wing, to reach the young one's bill. If it is the firſt time that the fowler comes to the place, ſo that the Birds do not know his intentions by experience, then they'll ſit and ſuffer themſelves to be killed; but if they fly away, and come again, then each young one knows how to find its mother's wing, as each bee does its cell, though there is no difference in their make.

Lax-Tite. The Lax-Tite, is a Water-bird, in appearance like a Skade, but with long red legs, and a red bill. This has its name from this ſingular circumſtance, that it, particularly in the Spring, when the Salmon comes up the rivers, follows that fiſh, and ſeems pleaſed in its company, hovering on the water where it paſſes: it is a kind of a ſignal to the fiſhermen.

Lerke. The Lerke, the Lark: of this bird we have here two ſorts, one called the Singing Lark, which we find only in Summer: this is of a brown colour, and builds in heath, and among ſmall buſhes, but is hard to be found. The other is the Korn Lerke: this is ſomething larger, and it is ſeen oftener in the Winter; yet both ſorts are ſeen ſometimes in large flat countries, and alſo on ſome of the iſlands.

Lom. The Lom, Liom, Lum, the Northern Diver, which Ol. Wormius, in Muſeo, p. 304, calls Colymbum Arcticum, is a Water-bird, not quite ſo large as the before deſcribed Immer, or Ember, but otherwiſe like it; but yet more like the Razor-bill (which has been before deſcribed) excepting that the neck is thicker, and the bill is ſharper. Its bigneſs may be known from this, that they ſometimes weigh two pounds. They are all over of a mouſe-grey, and ſomewhat lighter under the breaſt: tho' their wings are but ſmall, yet they fly pretty well; but they walk extremely ſlow, and with difficulty*, becauſe their legs ſtand ſo far backwards, under their tail, as they do on the Immeren and Razor-bill;

* From this Bird's bad gait Schefferus derives his name, in his Lappon, c. 30, where Lomme, or Lumme, he ſays, is the ſame as Lame, Halting, or Limping, claudicare; but that I will not determine. In the ſame place he talks of Wormii Mergis, or Halv-Ænder, whoſe pointed bill alone diſtinguiſhes it and many others from the common claſſe.

therefore

therefore it builds its neſt in the ruſhes, or on the ſides of freſh water lakes; but ſo cloſe to the water, that the dams can roll themſelves down into their proper element from the neſt, without the help of their legs. Though they live by freſh waters, ſtill they fly to the ſea alſo, to ſeek for food. There, as well as in the former place, they live upon all kind of ſmall fiſh, worms, and inſects, which they ſeek for by ducking twelve or ſixteen fathom deep in the water. The hen lays two dark brown eggs, and ſits alternately with her mate to hatch them. This is done in four weeks, and if the water riſes ſo high that it gets into the neſt, one or other ſtill continues ſitting on them. When this Bird is in a ſportive humour it makes a frightful ugly noiſe, juſt like the cries of a human creature in imminent danger, and calling for relief. It makes another very different noiſe, which is a ſignal to the farmers for fine weather, after a great deal of wet and ſtormy ſeaſons: at theſe times they are ſeen to fly up pretty high over their neſt. The Lumme's ſkin is drawn off with down and all, and is uſed to line caps with, and is reckoned better than ſwan-ſkins. After this was wrote, there was publiſhed a Work, call'd Olai Wormii Epiſtolæ; in the ſecond part of which there is found, ſub N°. DCCCCLIX. p. 1021. a letter to him from Abſolon Chriſtophorus, treating particularly of this Norvegian Bird; from which I ſhall quote the moſt important part of what is ſaid thereon, to illuſtrate and confirm further what has been delivered here. Conſultis itaque Iſlandis interpretibus, geminas vocis Loom ſignificationes, alta jam a multis annis oblivione in Norvegia obrutas ac ſepultas didici. Aiunt enim voce hac & anxiam cujuſque rei curam, & ſummam inſuper calliditatem denotari. Quod utrumque nomen huic avi peperiſſe tanto certe crediderim facilius, quanto plura & majora utriuſque nobis præbeat argumenta. Hujus quidem, dum pedum ad inceſſum uſu deſtituta, nidum adeo prope aquam ſibi ſtruit, ut ex eo in vicinam aquam ſe devolvat facillime demittatque rurſumque nidum petitura, infixo terræ roſtro, quod aduncum habet, molem corporis ſublevet, defectumque ita pedum utcunque ſuppleat. Illius etiam non ſpernenda ſunt documenta: quam enim ſit pro nido atque pullis ſuis anxia & ſollicita, exemplo erit, quod quoties largiores imbres præſentiſcat, toties, ne torrentium repentino confluvio intumeſcens ſtagnum, alluvione ſua nidum inveſteſque pullos inundet ac ſuffocet, metuit, huncque metum querula ſemper voce atque ejulatu teſtatur. Contra vero, cum futuram cœli ſerenitatem & clementiam præſagierit, lætis quaſi acclamationibus ſibi atque pullis ſuis gratulatur. Atque ex diverſa colymbi noſtri vociferatione, ruſtici noſtrates,

noſtrates, diverſas cœli aeriſque mutationes augurantur. Quando enim futuros nimbos querulo ſuo, hui, hui, hui, prædicit, dicunt vulgo: Dæ verte Bæteraff, di Loomin quia ſaa. E diverſo, cum ſerenitatis ſuo, Karloa, præconem agit aiunt ruſtici: Bi fær braat Turre ſive Torre, di Loomin roopa Turkeraff. Sic enim piſcatores ejus vocem æmulantur, propterea quod voce hac ſudum illis, aeris qualitatem, paſſeribus marinis eorumque ſegmentis ſoli exponendis ſiccandiſque aptam natam, pollicetur: id quod etiam Turkeroff Norvegis ſonat. Ova porro ſingulis annis terna vel quaterna parit; magnitudine anſerinis pæne paria, coloriſque fere praſini, ſed maculis quibuſdam ſparſa atque picta. Terna quidem communiter parit; quartum vero, niſi unum ei ſurreptum fuerit, nunquam addit. Cauſam hujus ternarii numeri (cum duos tantum excludat pullos), adferunt hanc, quod unum quotannis ovum, tributi aut decimæ quaſi nomine, neſcio cui, in nido relinquere debeat: quod cum plurimis aliis avibus ipſi commune eſſe; receptiſſima in vulgum fert opinio. Eſſe autem hanc avem ex earum numero, quæ, ſtatis anni vicibus; in loca calidiora abeunt, exque iis ad nos redeunt, documento eſſe poteſt ejus non ſibi ſub adultum prope ver ad nos appulſus, cui rei fidem adſtruit inveterata penitus ſimplicium animis ſuperſtitio. Creditum enim eſt plebecula, ſi quis jejunus nunciam reditus ejus vocem primum auribus hauſerit, eum, intra illius revolutionem anni, quodam propinquorum cognatorumve privandum eſſe. Quæ itidem de Cuculo longum tenuit ſuperſtitio. Ulterius modus, quo apud Norvegos Iſlandoſque capiatur, nobis oſtendendus. Apud Norvegos quidem ſatis tutum ipſi eſt hoſpitium, quippe qui illius carnem aſpernantur, rati inſuper nefas eſſe (de ſtolido hoc vulgo intelligendum), avem, olim ſanctam habitam, violare; ſaniores tamen emunctæque naris homines, vel ſclopis, (quod tamen raro ſucceſſu fieri ſupra monui), eam petunt, vel retibus piſcatoriis forte involutam, caſu magis, quam ex inſtituto capiunt. Iſlandi autem, præter modo dictos modos, gemino eam aſtu circumveniunt. Vel enim binos ad ipſum nidi aditum palos humi defigunt, quibus intermedium quendam laqueum ita aptant, ut petitura nidum avis laqueo collum inſerat, inque certam venatoribus prædam cedat: vel ſtagnum anguſtiore ſui parte, linea piſcatoria tranſmittunt; cujus extrema duo venatores, ad ſuum quiſque ſtagni latus tenent, illaque ſummam aquæ ſuperficiem leviter ſtringentes; avem prænatantem pedetentim inſequuntur, quæ inſidias eluſura, crebris urinationibus profundum petit, ſed eiſdem magis adhuc impeditur ſeque involvit. Illa enim ſe ſub aquis occultante, eo recta piſcatores, laqueum umbilico lineæ alligatum dirigunt, quo hauriendi aeris

gratia avem emerſuram eſſe, prævias in aqua ebullitiones monſtrant; atque ita capiti extra aquam exſerto laqueum induunt. Quæres, quem in uſum eam noſtri homines aucupentur? Carnem quidem minus in deliciis habent; exuvias autem, pectori capitique contra injurias hyemis muniendis, appetunt & conquirunt. Inſignem enim dictis corporis humani partibus, ob plumarum delicatam mollitiem ac denſitatem, operam præſtant. Capiti quidem tale ex iis faciunt tegmen, quali vulgus aulicorum plurimum utuntur, vulgus a Kabbutz ſua lingua vocat. Pectori fomentum longe ſaluberrimum præbet, adeo ut vel cygno, cujus apud ditiores exuviæ multo in pretio, nihil cedat.

Lund. The Lund, or Lund-Talle, the Anas Arctica, or Pope, is a middle-ſiz'd Sea-bird, ſomething larger than a Pidgeon, black and white, and on account of his beak, is called by ſome the Norvegian Parrot; for it is pretty large, and hooked like a Parrot's, tho' thinner and broader, and ſtriped prettily with yellow, red, and black. This bill is ſo ſharp, that when he bites any of the bird-catchers he takes off a large piece of fleſh: his claws are alſo very ſharp, with which, and his beak, he defends himſelf againſt the Raven, his enemy, whom he holds by the throat, and will carry him out to ſea, and drown him, before he looſes his hold. This Bird builds his neſt, (in which it lies on its back) not always alike, but according to the ſituation of the place; for if it be low, then it will make a ſlanting hole in the ground two or three ells deep; but if it be rocks and cliffs, then the Bird looks for holes between the cracks and openings: ſometimes alſo it builds between great ſtones, that are broke out, or looſened on the ſides of theſe rocks, and where it is the moſt difficult to get at them. The farmers have particular dogs, broke on purpoſe for their ſervice, to go in, and pull out the firſt they can lay hold of by the wings, where they are together in ſcores, or ſometimes one or two hundred together: their way is, that when one is laid hold of, and drawn out, he bites faſt hold of his next neighbour, and draws him with him; and all laying hold in the ſame manner, that they muſt all be drawn out, and killed. If the hole be not very deep, or the rock not ſo ſteep but that the bird-catcher can get at it, then they uſe a long ſtick to drive them out; this has a ſharp hook at the end.

Lucas Debes writes, p. 137, that on Farroe they alſo catch theſe Birds, when they come from ſea and ſeek their neſt, with a net ſpread on a pole, and kept open with a croſs ſtick, into which they careleſsly fly; this way they catch ſometimes 200 in a day.

a day *. The Lund lays but one egg at a time, which is as big again as one would imagine, in proportion to the bigneſs of its body; and is of a browniſh colour. If this be taken away from her, then ſhe lays another, but has hardly time to rear the young one to perfection by bringing it fiſh, ſo that they commonly periſh; and the mother follows the flight when the time comes, namely, juſt before, or juſt after Olai day, when they all together leave theſe parts, after having been here from the beginning of the month of April. What time they remain in Nordland, particularly on Roſt and Væroen, where they are found in the greateſt numbers; or whether they winter there, I do not know. They are a very cleanly Bird, for when they leave their neſt, they clean it, and ſcrape away all the foulneſs; and then ſtrew graſs over it, that they may find it the next year in proper order: they are very valuable for their feathers, which are exported, particularly from Nordland, in vaſt quantities, and bear a very good price: they are reckoned the next in goodneſs and ſoftneſs to the Edderfugl †, Mr. Peder Daſs deſcribes this Bird, in his Nordland Trompet, p. 82, pretty fully: and Franc. Willughbeius, who ſpeaking of the Scotch Iſlands, where this Bird, together with many other of the Sea-Birds belonging to this country are found, ſays, that when there happens on their paſſage in the Autumn, to come ſtormy and bad weather, ſo that they cannot move away, many periſh with hunger and fatigue, and are found dead in heaps by the fiſhing-men: there have been found alſo ſome of them under water, ſeemingly as if aſleep, or in a ſtate of inſenſibility; and when drawn up by the fiſhermen, has come to itſelf, and flew to land again. From this one may conclude that the Lunden, like the Swallow, may lie in a trance, or ſtate of inſenſibility, under the water. See Ornitholog. Lib. iii. cap. v. p. 245.

## SECT. III.

The Maage or Gull, called here Maaſe, is a well-known Strand-Bird of various ſpecies, yet all of one genus; for they all live upon ſmall fiſh, inſects, ſea-weeds, or the like, indeed on any Maage.

* This circumſtance makes me almoſt think that our Norvegian Lund is not ſo ſagacious by day as by night. It is, without doubt, the ſame Bird that Pere Labat deſcribes in his Voyage aux Iſles de l'Amerique, Tom. ii. p. 349. calling it Diable or Diablotin; the other properties, as alſo his time of departing from his abode, and the trouble he gives to catch him in the cracks of the ſteep rocks, all agree.

† Many of the Nordland farmers, that have ſhares in a rock, make it their chief maintenance, and even grow rich and conſiderable in their ſtation, if they keep many dogs; tho' their neighbours will take care that they ſhall not, by keeping too many, deprive them of their advantages; neither is this ſuffered by the government.

thing

thing that is found on the ſurface of the water, or along the coaſt; for it is not the cuſtom of the Maagen to duck under the water for its food; his gullet and craw are ſo large, that there has been found ſeven herrings in one of them at once; his beak is long, and ſomewhat bent at the extremity; and upwards towards the head there are two longiſh noſtrils; his legs are but thin and ſlender, but his wings are ſtrong. The difference of the ſeveral kinds of Gulls is this, that ſome are of a light grey colour, and large, which are called Graa-Maaſer; theſe have a yellow bill and red legs, and are of the ſize of a common hen. Some differ only by being blue and white, with ſome black feathers on the hinder part. Some are black on the wings and back, which are called Swarte-bager; of this is that called the Scare-crow. Others again are ſmaller, and of a blueiſh colour, which are called Sæe-Unger: they build their neſt near the water, particularly on the ſmall iſlands and cliffs in the ſea, which are covered with ſuch numbers of them, that they appear quite white *: their eggs, which are not deſpicable food, are taken away in large quantities. Each female lays three eggs; they are very large, with great black ſpots; they ſit alternately on them, and hatch them in about 14 days: the birdmen catch them with an angling-hook like fiſh; the fleſh is not uſed, and they are skinned with the down on, which is very thick, and makes their ſmall body appear much larger than it is †. When the Gull is coming into the water betwixt the cliffs and iſlands, and the main land, then the farmer knows it is time to make uſe of his nets to fiſh; for moſt kinds of fiſh come here in ſhoals, which this Bird purſues wherever they go.

Muſvit. See Kiodmeiſe.

Natvake. The Natvake, a ſmall Bird, which, no doubt, has that name from its watchfulneſs, and making an odd kind of noiſe all night; it is otherwiſe not much known to me.

Norwinds-Pibe. The Nordwinds-Pibe is ſomething leſs than a Starling; of a grey colour: it has, without doubt, this name from a noiſe that it makes, as is obſerved, when the North wind is to blow; this, if true, muſt come from an extraordinary ſenſation he feels in his body at that time.

* Sometimes the Eagle viſits them to feaſt himſelf, but then they gather together to defend themſelves, and with a loud ſhriek and noiſe ſcare this king of Birds, and often put him to flight.

† A particular ſort of Strand-Maager, which are found about Greenland; but as far as I know, not here: they are called by the Hollanders Mallemokke. See Anderſon's Deſcription of Greenland, §. xxx. p. m. 168.

The

The Nodde-Skriger is of the ſize of a Pigeon; in colour it is blue and white: it haunts the oak and hazel trees. Nodde Skriger.

Orn, the Eagle, Aquila, a well-known, large, ſtrong and majeſtic Bird, is held amongſt Birds as the lion amongſt the beaſts, for king. J. Klein reckons, p. 41, eight ſorts of Eagles, of which two only are known here, namely, the Rock-Eagle, and the Fiſh-Eagle; the firſt is alſo called here the Slag-Orn: it is ſomething leſs than the other, and ſpotted with grey; it haunts the higheſt places in the country, and kills hares, ſheep, lambs, and the like animals, as well as Birds; and if one may believe the farmers accounts, they add, that he will attack a deer ſometimes: in this enterprize he makes uſe of this ſtratagem; he ſoaks his wings in water, and then covers them with ſand and gravel, with which he flies againſt the deer's face, and blinds him for a time; the pain of this ſets him running about like a diſtracted creature, and frequently he tumbles down a rock, or ſome ſteep place, and breaks his neck; thus he becomes a prey to the Eagle. Many have aſſured me, that the ſame device is practiſed by this Bird on horſes, particularly the old and worn out; and I have both heard, and read in foreign authors, many accounts of their carrying away children of two or three years old, but never believed it, till a very worthy man, who was well acquainted with the fact, aſſured me of the following incident. In the year 1737, in the pariſh of Norderhougs on Ringeringe, a boy of about two years old had got out into the fields to look for his parents, who were at work pretty near the houſe, but not near enough to ſave this child from an Eagle, who ſtuck his talons into him, and flew away with him, which the poor parents beheld with inexpreſſible grief and anguiſh. Hr. Anderſon, in his Deſcription of Iceland, § xxxviii. p. m. 38. ſays, that children of four or five years old have been taken away by the Eagles; which the learned anonymous Icelander, who has illuſtrated the Daniſh tranſlation with his comment, doubts, p. 282, in regard to the age. Ray * gives an account of a child of a year old, in the Orkney iſlands, that was carried away four miles by an Eagle to his neſt, where the mother found it unhurt, and took it away: many more ſuch inſtances may be met with in authors, as a warning to careleſs parents. Orn.

* Quæ infantulum unius anni pannis involutum arripuit (quem mater teſſelas uſſibiles pro igne allatura, momento temporis depoſuerat in loco Hautonhead dicto) eumque deportaſſe per 4 millia paſſuum ad Hoyam. Qua re ex matris ejulatu cognita, quatuor viri illuc in navicula profecti ſunt, & ſcientes ubi nidus eſſet, infantulum illæſum & intactum deprehenderunt. Ray. Prodom. Hiſt. Nat. Scot.

Fiſh Eagle. The Fiſk-Orn, or Fiſh-Eagle, is of a light brown colour, and exceeds the former in ſize. This does not diſlike a dead carcaſe on ſhore, but lives principally on fiſh, which it often watches to take from the otters, and frequently ſeizes, on the ſurface of the water. It will eat alſo the heads and entrails of fiſh, which are left in great heaps, after the cleanſing and ſalting of fiſh, and fall to the ſhare of many other Birds and Beaſts; but when the Eagle comes all belongs to him alone. When this Bird flies out at ſea to ſtrike a fiſh with his talons, he ſometimes happens to lay hold of ſuch as are too ſtrong for him, and they will drag him down to the bottom; this has been particularly ſeen more than once with the Helleflynder, which is called here Queite, and will be deſcribed hereafter. This is ſo large, that it will ſometimes fill a caſk: the Queit's high and prominent back makes him appear, in the eyes of the Eagle, much leſs than he really is: when the Eagle ſtrikes his talons into him he cannot eaſily get them out again, becauſe of their crookedneſs and length; ſo that the fiſh drags him down with him; and the Bird makes a miſerable cry, keeping himſelf up, and working with his wings ſpread as long as he poſſibly can, tho' in vain; for at laſt he muſt yield, and become a prey to thoſe he intended to devour. This may ſerve as an emblem to many ſtupid and inconſiderate enterprizers. I have been told that our Sundmoerſke fiſhers ſometimes catch this kind of fiſh with Eagle's talons in the backs of them, and covered over with fleſh and fat: this is a mark of the fiſh's conquering, as aforeſaid *. And I have been alſo told by ſeveral very creditable people, from their own knowledge, another unfortunate expedition of the Eagle; which ſhews that this mighty king of Birds is often in the wrong, and extends his attempts beyond his power among the fiſh. An incident of this kind happened not far from Bergen; where an Eagle ſtood on the bank of a river, and ſaw a large ſalmon, as if it were juſt under him; he ſtruck inſtantly one of his talons into the root of an elm juſt by and partly hanging over the river, the other he ſtruck into the ſalmon, which was very large, and in his proper element, which doubled his ſtrength, ſo that he ſwam away, and ſplit the Eagle to his neck, making literally a ſpread Eagle of him; a creature otherwiſe known only in heraldry.

* The crocodile plays his perſecutor the tyger much the ſame kind of a trick, when he has ſtruck his claws in that creature's eyes; according to Hr. Condamine, in his Voyage on the Amazone River. See Hamb. Magazine, Vol. vi. 3d St. p. 256.

SECT.

## SECT. IV.

Raage. See Allike.

Ravn, the Raven, Corvus, is here, as in other places, well known to be a voracious and hurtful Bird with us: it not only deſtroys other Birds, and their eggs, but alſo lambs and kids. For this reaſon, according to Mr. L. Debes's account, it was uſual formerly, and is ſtill at Faroe, that each farmer, on St. Olai's day, is obliged to bring a Raven's head with him, or forfeit four ſkillings. The ſame author alſo ſays, p. 125, that in this country there are found ſome, tho' few, that are white; and ſome half white and half black. Theſe Birds are eaſily taught to ſpeak. Ravn.

Willughbeius gives an account, Lib. iii. cap. 3. p. 248, of the Sea Raven, with feet like a Gooſe, called the Cormorant, which are found on the Scotch iſlands, and conſequently here; for we have all kind of Birds in common with them; though I have had no particular account of this Bird from my obſervers. He ſays of theſe, that they are tamed and broke in the ſame manner as the Otters, to catch fiſh for their maſters uſe, of which the Cormorant brings aſhore a pretty deal together, and then caſts them up. This Bird's way of catching fiſh is to fill his craw with them, and throw them up when he comes aſhore, for the family's uſe; ſo that they do not look very tempting to eat. We have the Night Raven alſo here, which differs by his frightful noiſe in the night, and is thence named Nycti Corax. Cormorant.

Reyn Spoe. See Heiloe.

Ringetroſt. See Droſſell.

Of the Rype, or Partridge, we have in Norway two ſorts, namely, the Field Rype, which lives very high in the rocks, and is leſs than the other, and the common ſort; they are both much about the ſize of a Pigeon, which they alſo reſemble, excepting that their legs are covered with feathers; and they are therefore called Lagopus, i. e. Hare-foot. The common Partridge, which haunts the low vallies or dales, is ſomething larger, about the ſize of a ſmall Chicken. Both ſorts are white in the Winter, in the Spring ſpeckled, and in the Summer grey; they are here in great quantities, yet ſome years more than others *. Rype.

* When the firſt ſnow comes with the eaſt or north-eaſt wind from the high mountains down into the vallies, then we here, in the dioceſe of Bergen, expect a great quantity of Partridges; but if the firſt ſnow comes with a weſt or ſouth-weſt wind, then it carries them up towards the rocks, and we don't get many that year hereabout.

They

They are ſhot, or catch'd in nets, or under a heavy board ſet up for that purpoſe: they are brought to this town in the Winter by thouſands, and are put up half roaſted in firkins, and ſent away to other countries: their fleſh, next to the Growſe and Francolin, is the beſt of any Wild-fowl we have, eſpecially when they are ſhot; for when they are ſmothered, the blood remains in them, and they neither look nor eat well. In the Summer they live upon berries, tops of trees, and other greens; but in the Winter they do as has been ſaid of the Growſe. They ſeek covering and warmth by burying themſelves in the deepeſt ſnow, where they ſit in great heaps together, taking a magazine of food with them in their crops, by ſtuffing them as full as they can with elm and birch-tops, ſo that their breaſts ſtand out, and makes them look as big again. With this ſtore they ſupport themſelves till the following Spring. This particular I have from Ol. Magn. L. xix. c. 33. It was known alſo to Derham, and is quoted in his Phyſico Theologic. Lib. iv. c. 13. as an inſtance of the Almighty and Wiſe Creator's care, for thoſe things that otherwiſe would periſh. The Partridge is a national and peculiar Norvegian Bird, and belongs to them perhaps rather than any other country. I muſt obſerve that they are frequent, tho' not in ſuch abundance in Pruſſian Courland and Switzerland *. Mr. Jac. Klein, whom I have often quoted, ſpeaks of them, in his Hiſtoria Avium, p. 173, thus: Lagopus, Fiælripor, Snieripor, Tetrao rectricibus altibus intermediis nigris, apice albis, Linn. F. Suec. Schnee-Hen, Haſſel-Hen, with Hare's feet, paulo majores ſunt attagenibus noſtris, plantis pedum quoque villoſis, prout pedes leporum. Ejuſmodi ut in Curlandia, nec non in Pruſſia, haud procul a civitate Tilſit, immo in Alpibus Helveticis aliiſque. Nonnullas die 20 Jan. 1747, ex Pruſſia acceptas habui, quarum alteram totam albam, præter roſtrum, inferam caudam & ſex ſcaphos remigum, delineari curabam. Ungues habent latos concavos, &c. Utrum in Pruſſia verno & autumnali temporibus ſimiliter colores mutent Lagopi proprie dicti, pro certo affirmare non auſim. They are alſo found on the Pyrenean mountains, and in the Summer fly up the hills in queſt of the ice and ſnow, which they love. This is atteſted by Gaſparie Schotti, in his Phyſica Curioſa, Lib. ix. cap. 48, p. 1009, Reperiuntur Lagopodes in Alpibus & Pyrenæis montibus & in ſummis jugis. In frigore, nive & glacie delectantur, ut ubi locis inferioribus liquantur nives, altiora & ſoli averſa petant loca, in quibus nix perennat. Latent homine con-

God's providence.

* Dr. Shaw deſcribes the African Bird which he calls Kitaviah, ſomething like Rypen, though of a quite different colour. See his Voyage du Levant, Tom. i. p. 327.

ſpecto

ſpecto & cavent motu ſe prodere. Tantæ ſimplicitatis ſunt, ut a venatoribus diſpoſitam lapidum ſeriem tranſire non audeant, &c. The laſt words put me in mind, that in many other places they make ſtone walls without mortar, which the Partridges will not go over; but here in Norway the farmers make a kind of a fence in the ſnow, of furz, at the ends of which they put their ſnares, into which the ſilly Birds run, and are caught.

The Hawk is a great enemy to them, and they are ſo frightned by that Bird ſometimes, that they fly into the hands of men; but they do not find themſelves there better protected.

## SECT. V.

The Sandtærne, is a Norvegian Bird, unknown to me; which J. Ramus, amongſt others, only names, p. 249. Sandtærne.

The Sandtal, or Lapwing, called alſo Tendelob, is, without doubt, the ſame as is otherwiſe called by a ſhorter name, Ten. This laſt, of which I have a circumſtantial account, are a ſort of Strand Gulls, tho' very different from thoſe ſorts before deſcrib'd; they are not near ſo large, and are moſt like the ſmaller kind. In colour they are ſomewhat like a blue Gull, white underneath, with ſome black feathers at the extremity of their wings and tail; and on their head they have a mighty pretty little black crown, a red longiſh bill, ſmall red legs, and, juſt above their eyes, a ſmall red mark. Sandtal.

This Bird remains here but a ſhort time, namely, from about Midſummer-day until Autumn, and lays in the mean time three grey ſpotted eggs, like Pigeons eggs: in eight days the young are hatch'd, and in a very few more are fully able to provide for themſelves: by which we ſee how nature operates, according to time and opportunity. Their food is inſects and ſmall fiſh, which ſwim pretty high in the water, or run in upon the flats: they do not take them with their bill, but with their wings, which are of a conſiderable length; and they do it in this manner: they fly ſeveral fathom high, and draw their wings together, and then drop down ſuddenly upon the fiſh like a ſtone; then they graſp their prey with their wings, and carry them away priſoners.

The Savorren, is a pretty large Sea-Bird, in body and neck not unlike the Growſe, but belonging to the Gooſe or Duck kind; for they are whole footed. We have no very exact account of them, for they are not ſeen longer in theſe ſeas than the month of January and beginning of February; they then, Savorren.

like other fiſh-hunters of their kind, come to fiſh for the Winter herrings, at the beginning of the ſeaſon.

Sey-Unge. See Maaſe.

Sieben-ſchwantz. The Siebenſchwantz, as it is commonly called, I believe to be the Sieden or Seidenſchwantz, which Hr. Klein, p. 70, reckons to be of the Thruſh kind, and calls them, among others, la Grive Bohemienne, like thoſe of Fabro, called Micro-phœnix, perhaps becauſe we ſee but one at a time *. This Bird probably has the name of Siebenſchwatz from its long tail, adorned with fine ſhining feathers, red, blue, and yellow, which makes them extremely pretty: it is called alſo the Bohemian Chatterer. Almoſt at the end of each feather on the wings, which otherwiſe are of various colours, there is a ſmall red bright ſpot, like red ſealing wax.

Siiſgen. The Siiſgen is a ſmall dark-coloured Bird; we have them in great abundance, and particularly where there are pine trees.

Skade. The Skade, Skiære, Skior, Pica, the Magpie, a common well-known Bird, which hardly needs to be deſcribed: it lives about houſes, and is therefore called in this country Tun-Fowl, that is, a domeſtic Bird. They feed upon carrion; and if they lay hold of a very young kid, which they do ſometimes, the farmer is afraid to revenge himſelf, being of opinion that this his neighbour has a greater right than other Birds of prey, and knows how to retaliate an injury. They build their neſt in trees, very carefully, of ſmall ſticks, and the like, with a cover, and an entrance in the ſide. They are very fond of their young, and of their eggs: if one boil the eggs, and put them in the neſt again, they will ſit upon them till they die: if their tongue be ſlit, and they are taught a little, they'll not be ſhort of the Parrot in talking. The Skov-Skaden, or Wood-Magpie, are here grey and white, ſpeckled or ſtriped, with ſome red feathers; they do not go near the houſes, as the others, but mimick the voice of other Birds and beaſts. If any one comes near their neſt, they'll boldly fly full in their face to prevent the taking away their young.

* This fine Bird, whoſe food is juniper-berries, is reckoned, by Hr. Joh. Heinr. Zorn, to be originally of this country; and from hence to have gone into Germany: "The name Bohemelein is founded upon a groundleſs opinion that it is an exotic "Bird, and comes from Bohemia, which is ſuppoſed as much its original native "place as this; tho', in their paſſage through Bohemia, and on account of food, "they may like to ſtay there, yet 'tis moſt probable they come from the more "diſtant northern parts; and, like other Juniper-Birds, have only ſtraggled hither."

The

The Strand-Skade, which lives near the water, and feeds on ſnails and oyſters, has red legs, but no back-toe: this is ſuppoſed to be the Hæmantopus of Pliny.

The Skarv, the Columbus, or Loon, is a pretty large Sea-Bird; 'tis larger than a Duck, and has legs and feet like them, excepting that the outermoſt toe is much longer than the reſt: on all the toes it has long, crooked, and ſharp claws; theſe, as alſo the whole body of the Bird, are black; the legs ſtand further out on each ſide, than on the Duck or Gooſe; ſo that they ſtraddle a great deal wider: their neck, tail and wings are very long; on the top of their neck there is a green bright feather. We have three kinds of them; the firſt is called Top-Skarv, becauſe it has a tuft on his head; this does not come into the rivers, but keeps to the outermoſt iſlands. The other ſort are larger; and theſe are diſtinguiſhed by a large white ſpot, like a crown piece, on each of their black thighs, which gives them the name of Huiidlaaring, White Thighs. The third ſort are without any ſuch diſtinction; but they are leſs than the firſt, and larger than the laſt: this Bird keeps near the ſea on the ſteepeſt rocks*, and lay three ſnow-white eggs like Gooſe eggs; they ſit upon them, by turns, three weeks: theſe eggs have this particular quality, that they cannot be boiled hard, but always remain liquid. The young are white at firſt; they don't grow black till after the third week; and then they live with the old ones, which are mighty expert at catching ſmall fiſh, and dive, as the fiſhermen ſay, very deep, even 20 or 30 fathoms, to fetch up all kind of ſmall fiſh, of which one ſometimes finds ſuch a number in their craw when they are killed, that it is impoſſible to conceive it; and ſtill more ſurpriſing it muſt appear, yet nevertheleſs it is ſtrictly true, and ſtands confirmed by many that have made their obſervations, that tho' the Loon's neck is long and ſlender, and it would be difficult to thruſt down two fingers into it, yet the Bird can ſtretch the muſculous parts of his throat ſo wide, as to ſwallow a flounder half a foot broad, ſuch having been found in his ſtomach. When the Loon comes aſhore he ſtretches himſelf upon his legs againſt the wind, that he may be thoroughly dried; but as this ſeldom happens, we call, in this country, any body that is wet, ſlovenly, and diſagreeable, a Loon; or if they have their cloaths but ſeldom dry, we ſay, He is as wet as a Loon. Skarv.

* As theſe Birds harbour together in great numbers, the farmers uſe this piece of art to catch them: in the evening, when they are all got together, they take their boats and row under theſe rocks, and make a large fire; the ſudden heat and ſmoak intoxicates them, and they drop down in heaps, and are eaſily killed.

The

Skrabe. The Skrabe is a middle-ſized Sea-bird; ſo called, becauſe it ſcrapes or digs itſelf a hole down in the ground, or in gravel and ſand betwixt the ſtones, to make its neſt like the Pope or Arctick Duck. It lies there, not as other Birds, on its belly, but on its back. Lucas Debes gives an account, p. 133, that on Farroe, where this kind are moſt frequent, the people eat their young ones, of which they have annually but one, and ſay that it is fatter than a fed Gooſe; which is the more remarkable, becauſe it is fed by the mother only at nights, and does not ſee her all day. Any thing further I do not know of this Bird.

Skue. The Skue, or Black Diver, is in make and form like a large Gull, and 'tis coal-black like a Raven. It lives in the manner as has been ſaid of the Jo-fuglen; not by fiſhing for it, for he is not able to dive; but by robbing other Birds of what they have caught: he purſues them one after another, beats them with his wings, and does not leave them till they let ſlip what they have got, and he catches it in the fall; how they manage with their young I have not been able to learn; but all agree that they are very fierce when any one approaches their neſt, and are not afraid to lay hold with their beak, and give hard blows with their wings. The fowlers therefore are forced to make uſe of knives ſometimes to defend themſelves, againſt which the Birds fly, and are killed.

Snee-fugl. The Snee-fugl, or Winter-fugl, the Snow-bird, ſo called becauſe they appear at the latter end of the Winter, or againſt the Spring, when there is much ſnow, and are not ſeen any more flying about when the Summer advances; they are always in the country. They live in the cracks of the higheſt rocks, and feed upon worms, flies, and inſects. The form of this Bird is like a large Gull, or ſomething larger; 'tis black and white: the hen is more inclinable to grey, the head is large and round.

Sneppe. The Sneppe, or Snipe; called alſo Scalopax, Langſnabel, on account of his long beak, is of a middling ſize, as big again as a Chaffinch, and excellent to eat when it is fat: ſome call them Myr-Snepper, becauſe they live in moſſes and on heaths. Theſe are brown, and have a little black on the back. The Wood-Snipe is much of the ſame kind, but is reckoned better for food, and wholeſomer. The Strand-Snipe is the leaſt; 'tis of a light colour, and almoſt like a Gull; it lives on ſhell-fiſh, worms, and ſmall fiſh along the coaſt. Each of theſe kinds may be divided again into three or four ſorts, but the difference is but ſmall, and what I am not enough acquainted with. The Snipe

is

is a Bird of paſſage; it comes in the Spring, and goes away in the Winter.

## SECT. VI.

The Solſort, or Miſſel-Bird, is a ſmall Bird, ſomething like a Thruſh or Starling, and is of that ſpecies: it is reckoned delicate food, like the reſt of that kind; they diſtinguiſh themſelves by ſinging on Summer evenings till midnight. Solſort.

The Spette, Træe-pikker, or Træe-hakker, the Wood-pecker, is a middle-ſized Bird of various colours, with a very ſtrong beak, and in it a long and pointed tongue, of a peculiar ſhape, the end of which is hard, and like horn; the beak is ſo ſharp and ſtrong, that the Wood-pecker can bore a very deep hole with it in a tree. They build their neſts in hollow trees; their feet have four long toes, of which two ſtand forward, and the other two quite backward; they live chiefly upon worms, maggots and inſects, that they find under the bark of trees: they hunt them about, and kill them with their long ſharp-pointed tongue; with which they can exactly hit the ſmalleſt prey. There are many ſorts of Wood-peckers, differing only in colours; as the green, the black, and the yellow Wood-pecker; the two firſt have red caps as it were on their heads. Spette.

The Spove, or Godwit, is a Land-bird of that kind, that frequent the ſea-coaſt without going into the water. They watch along the ſhore to catch the ſhell-fiſh and other ſmall fiſhes that are driven up. It is a middle-ſized Bird, almoſt like a Partridge; brown and grey, ſpeckled under the breaſt, and has long legs for a Bird of its ſize; theſe are like a Stork's: it has alſo a very long and crooked bill, longer than the Snipe's. They build their neſt in the open country, not far from the ſea, and lay three darkiſh eggs, about the ſize of a hen's, which the male and female ſit on alternately for 14 days. They come in the Spring and go away in Autumn, tho' late, when the firſt ſnow falls. Spove.

The Spurre, the Sparrow, is here, as in other places, more common than the farmer could wiſh. The grey Spurrer, which uſually keeps near the houſes, are called here Huus-kæld: the yellow and greeniſh ſort lives moſtly in the woods *. The white Spurrer, of which Aldrovandus, in Ornitholog. Lib. xv. c. 10. ſpeaks, are alſo found here in the Winter in ſome places, Spurre.

* A perſon of judgment aſſures me that theſe are not properly of the ſecond kind; and that they are ſeen in great numbers in the Winter; they are called in Germany Emmerling, and build their neſt in ſmall buſhes.

tho' that difference probably is only a change of their colour, as the Partridges and hares become white in Winter; but I do not know any more of this, than what Olig. Jacobæus, in Muſeo Regio, Sect. ii. p. 12. writes: In quibuſdam Norvegiæ locis tempore hyemali paſſeres omnes niveum colorem induere nonnulli referunt.

Stær. The Stær or Star, the Starling, is in ſhape like a Thruſh; it is black and ſpotted; this ſort appears uſually in great flights, and builds its neſt in barns or ſtables. The Starling has two broods of young in a year; and in the Winter they remain with us in a ſtate of inſenſibility.

Steendulp. The Steendulp, or Steenſquette, the Water-wagtail, ſo called becauſe it builds its neſt among ſtones, is a ſmall grey and white Bird, ſomething like a Sparrow: it is called by ſome Quick Stiert, becauſe it is always wagging its tail.

Stillitz. The Stillitz, the Goldfinch, is a well-known pretty little Bird, admired for its ſinging, and frequently kept in a cage.

Stork. The Stork, does not properly belong to this work, becauſe it is not a native of this country, and but few Norvegians have ever ſeen one, eſpecially eaſtward. Some perſons tell me they have ſeen Storks weſtward, but then perhaps only a ſingle one, and never to make any ſtay, or build their neſts; ſo that they have probably been ſtray'd ones, that by accident had left the flock *.

Strand Erle. See Fiær Muus.

Strand Skade. See Skade.

Svale. The Svale, or Swallow, is very well known by its building about houſes. Hr. Jac. Klein, in his Hiſtoria Avium, juſt publiſhed, p. 195, & ſeq. has given a long diſſertation concerning the Swallows place of habitation in the Winter: he has inſerted ſeveral well-atteſted accounts, that perſons have found them at that ſeaſon in the water, which does not want confirmation in this country; for almoſt every body knows that towards the Winter, after they have chirped about a little, or, as we ſay, ſung their Swallow-ſong, they fly in flocks together, and plunge themſelves down in freſh-water lakes, and commonly amongſt reeds and buſhes; whence, in the Spring, they come forth again, and take poſſeſſion of their former dwellings. Our fiſhermen in

* The ſcarcity of this Bird in Norway, one may ſay is, like the reſt of God's works, wiſely contrived; for this country has leſs occaſion for them than others, and they would find leſs to live upon, becauſe here, as has been ſaid before, are fewer Snakes and poiſonous creatures. This reaſon is juſter than Dr. Owen's jeſt of the Stork's averſion to thoſe cities or towns in Germany where they do not pay the clergy their tenths: Il rapporte, que les cigognes ſont favorables au clerge, car elles ne veulent point ſejourner dans aucune ville d'Allemagne, ou l'on ne paye point de dimes aux Eccleſiaſtiques. Biblioth. Britan. Tom. xix. p. 180.

the

the Winter ſometimes, by accident, fall upon whole flocks of Swallows in this ſtate, and bring them up by ſcores, and even by hundreds together: they find them coupled two and two together, with their legs entangled, and bills ſtuck in one another; and they appear all together like a ſtrange maſs. If they are brought into a warm room they will begin to move in half an hour, and in a little while will flutter, and fly about; yet this untimely and unnatural reviving does not laſt longer than an hour at moſt, and then they entirely die. In Olaus Magnus's time this experiment was well known in this country, and is deſcribed in his Hiſtor. Septentr. lib. xix. cap. 11 *.

The Svane, the Swan, is a ſtranger in this climate, and is properly no Norvegian Bird, and therefore never ſeen in the eaſt country, where the rivers are always frozen up in the Winter; but on the weſtern ſide, where I (Part i. chap. i.) have obſerved that the Winters are much milder than in Denmark, or many parts of Germany; and where the ſea is always open and unfrozen, there are Swans, particularly in Sundfiord, near Svane Gaard, and thereabouts, tho' not in any great number; for they are but the offſpring of ſome few ſtragglers, which the ſevere Winters of 1709 and 1740 in particular, drove hither to ſeek for open waters; at which time the cold was ſo ſevere, that even in France the centinels died on their poſts, the vines were kill'd by the froſt, and the Birds dropt down dead out of the air; the whole Eaſt Sea was at that time frozen over; ſo that people travell'd from Copenhagen to Dantzick upon the ice, as ſecure as if they travell'd on land; but all the ſalt waters in this country were, at that time, open; and alſo at Bergens-Vaag God's wonderful providence brought us at that time many Water-fowls, before unknown to us, and amongſt them Swans. This muſt appear wonderful to a philoſopher, who would certainly never be perſuaded to look for fluid water in the North, when it was frozen in the South †. Svane.

Sondenwinds-Fugl, the South-wind Bird, ſo called becauſe it is never ſeen but when the South-wind begins to blow, as the before-mentioned Nordwinds Pibe prognoſticates the North-wind; ſo that theſe two ſpecies of Birds ſerve here as a living Weather-glaſs, forming their prognoſtications not from deep conſideration and concluſions, but from the greater or leſſer preſſure Sondenwinds-fugl.

* Nevertheleſs this inconteſtible truth has been lately, and without the leaſt foundation, contradicted by George Edwards, in his Natural Hiſtory of Birds. See Biblioth. Britannique, Tom. xxiii. P. i. p. 212.

† In Dr. Nic. Horrebow's Account of Iceland, juſt publiſhed, we read with ſurprize that Swans are found there in great numbers in the Summer, in freſh water; and in the Winter in the open ſea. §. 44.

of

of the air on their bodies; juſt as the cat's ſcratching the trees portends a ſtorm. Not to mention the many almanacks people have about their bodies, to tell them when bad weather is coming. The ſmall Bird which has occaſioned this digreſſion is alſo called Haren. It is black, larger than a Starling, and has a very ſharp beak. Whether it is known any where elſe I cannot ſay; but I have not met with this, nor ſeveral other Norvegian Birds, amongſt the ſeveral writers of Ornithology.

## SECT. VII.

Tærne. See Sandtærne.

Teiſt. The Teiſt, is a Sea-bird of the eatable kind, and is very well taſted: it is ſomething leſs than the Razor-bill, and has red legs, and a red bill, which laſt is moderately long. In the Summer they are black, with half their wings white; and in the Winter they change to a light grey, and that ſo ſuddenly, that in a few Winter-nights one may immediately perceive the difference: they lay two grey ſpotted eggs, like a Pigeon's. The male and female ſit upon them by turns, for fourteen days: they build in hollows and cracks in the rocks, near the ſea. Hr. Ramus ſays, p. 250, that the Teiſten's dung is of a deep red colour, and they live upon a kind of ſhell-fiſh, which they get along the ſea-coaſt, which poſſibly occaſions that red colour. It is that kind of ſhell-fiſh from which purple was firſt produced. It is probable that theſe purple-ſnails might alſo be found here in great quantities, if they were ſearch'd for. See further, Cap. ii. §. 11. of the inſect called Roe Aat.

Ten. See Sandtallen, or Tendeloben *.

Tield. The Tield, called alſo Glib, and by ſome Strand Skade, tho' this name perhaps is given to two different ſorts of Birds. The Tielden pretty much reſembles the Loon: it has a long yellow beak butting out towards the end: the feet are half cloven and half webb'd, like thoſe kind of Birds that live upon ſuch prey as is caught both on land and in water. They come early in the Spring, and by their cries fright other Birds. This Bird is a great enemy to the Raven: it flies againſt him with violence, and ſticks his thick and ſharp bill into him; this makes him ſet up a melancholy noiſe, and take to flight; for this reaſon the Tielden is the farmer's favourite, and is treated as a protector and

* The three names, Tærne, or Terne, Tedn, and Ten, belong, without doubt, to one and the ſame Bird; for the eaſtern and weſtern dialect makes it appear ſo in other things; as when they, according to the Daniſh manner of expreſſing, ſhould ſay, Jern, Horn, Korn, Barn, they ſay, in their way, Jedn, Hodn, Kodn, Baadn.

welcome

welcome gueſt, that muſt not be abuſed. Their manner of breeding is unknown to me.

The Tiur, Teer, Todder, Urægallus Major, the Cock of the Wood, is a large Wood-bird, in the general appearance not unlike an Eagle, and is the largeſt of all the eatable Birds in this country. It reſembles a wild Turkey-cock, eſpecially in the bill and feet, tho' the claws are ſomewhat more crooked: this is to be underſtood of the cock, who is black, and ſometimes of a dark-grey, and has ſome red about the eyes. The hen, called Roy, is much leſs, and is browniſh, with black ſpots*: they generally are found in great woods, where they live upon juniper-berries and fir-tops: this may be perceived by the taſte of their fleſh, which is otherwiſe very tender, and an excellent diſh roaſted: it has from this food that reſinous taſte for which it is ſo remarkable. In Winter they bury themſelves in the ſnow, like the Partridge and Growſe, but not deep; nor do they ſtay there in the night. This is the reaſon that they are deſtroyed by the fox, who knows how to find out their unſafe quarters. They have alſo a dangerous enemy in the Goſs-hawk, which they do not oppoſe, tho' they are much larger. When they are about breeding it is ſaid the cock ſwells, and raiſes his feathers like a Turkey-cock, and makes a ſort of cracking noiſe with his bill. Some writers make no other difference betwixt the Cock of the Wood and the leſſer Tetrao, than that they are a larger ſort of the ſame ſpecies, and call this Urogallus, Tetrao Major. By the Venetians, Gallo di Montagna. Angl. Cock of the Mountain, or of the Wood. Tiur.

Træa-Pikker. See Spette.

Troſt. See Droſſell.

## SECT. VIII.

Vagtel, Coturnix, the Quail, a ſmall, delicious, and ſcarce Bird: it is found in ſome places in the eaſt country, and alſo at Jedderen; but here I have not ſeen them. Vagtel.

Vibe, the Plover, a well-known Bird, of a middling ſize, of a brown and grey colour, and diſtinguiſhed by a tuft on the back part of his neck, and by the uncommon noiſe which betrays his neſt when he wants to conceal it: there are not many of Vibe.

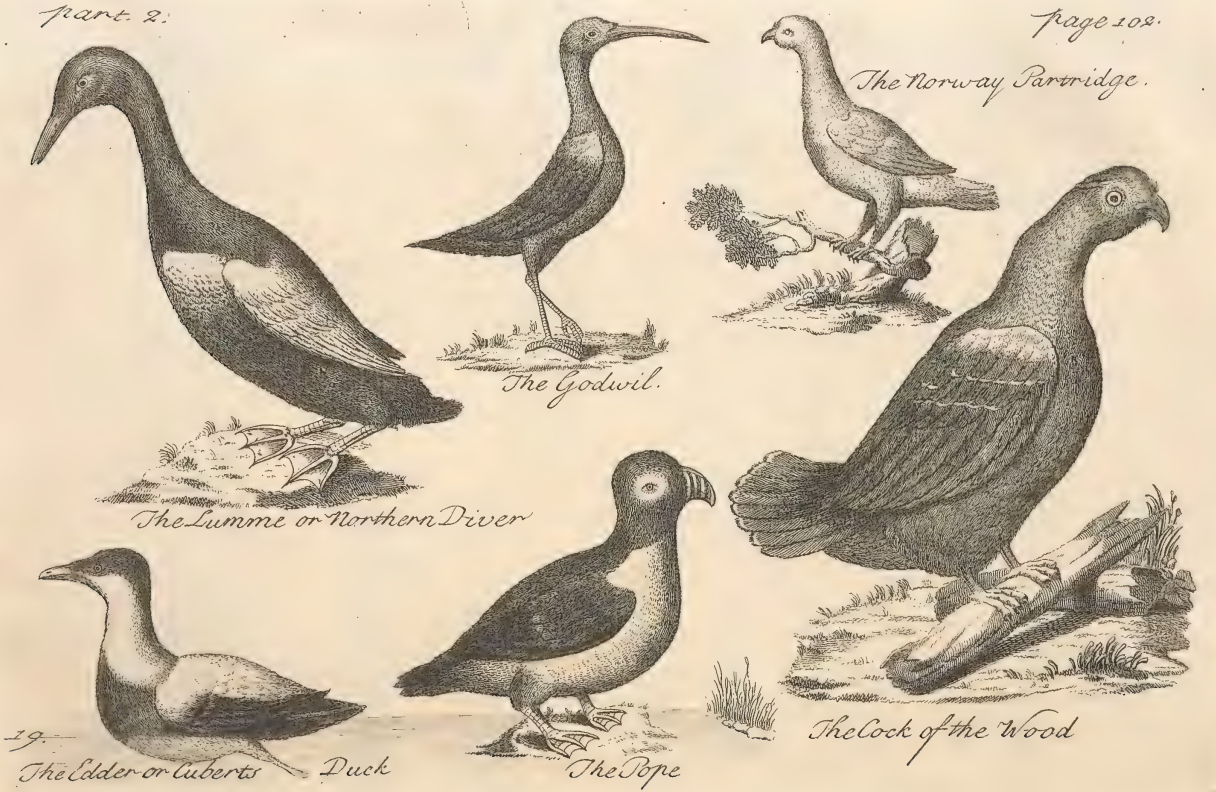
* Grygallum majorem Geſneri & Aldrovandi hujus avis fœminam eſſe exiſtimo, fœmina enim in hoc genere avium, colorum varietate & pulchritudine mares excellunt. Cum vero Geſnerus putaverit, in nullo animalium genere fœminam mari pulchritudine anteire, præſumpta hac opinione deceptus in utroque urogalla ſeu Tetraone majore ſcilicet & minore diverſum ſexum pro diverſa ſpecie habuit & deſcripſit. Willoughb. Ornitholog. Lib. ii. c. 12. §. 1. p. 124.

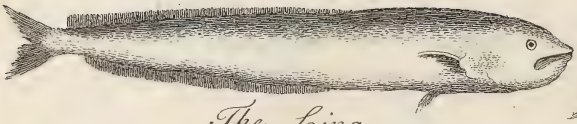
them hereabouts; what we have are moſtly in Tonsberg-Lehn and Borreſyſſel.

Berg Ugle. The Ugle, the Owl: of this Bird we have two ſorts, namely, the Berg, or Stone Owl, which is large, and grey ſpeckled, with great round red eyes. It lives in the rocks, and makes a frightful noiſe, ſnapping at the ſame time with his bill like a Stork.

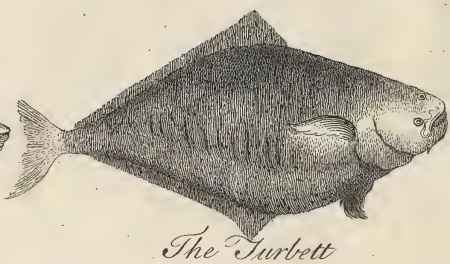
Kat Ugle. The Kat Ugle, is ſomething leſs than the former, and its head is more like a Cat's than a Bird's. This feeds on mice, and other ſuch vermin, great quantities of which are found in their neſts; for this reaſon the prudent farmers willingly afford them an habitation in their barns: they are however hated here, from a ſuperſtitious notion people have, that it forebodes death in the family where they happen to take up their abode. They lay two eggs, and if they are chang'd for hen's eggs, the Owl will hatch them, but eat the young, when they find they are not of their own kind. If the Owl and the Cat happen to quarrel and fight, they do not leave off till one or the other is killed; ſo that their enmity is not the leſs for their being in ſome degree of kin. Thus we ſee, according to the Norvegian proverb, Friends are the greateſt foes: the greateſt friends may become the greateſt enemies.

CHAP-


The Norway Partridge.
The Godwil.
The Lumme or Northern Diver
19.
The Eider or Eiderts Duck
The Pope
The Cock of the Wood

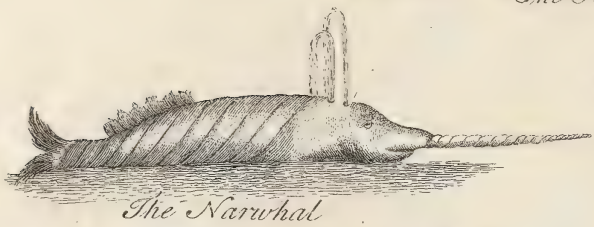


The Ling



The Turbett

The Needle fish



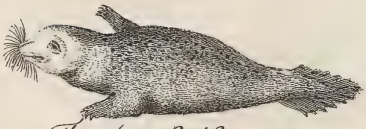
The Narwhal

The Razor fish

The Square fish

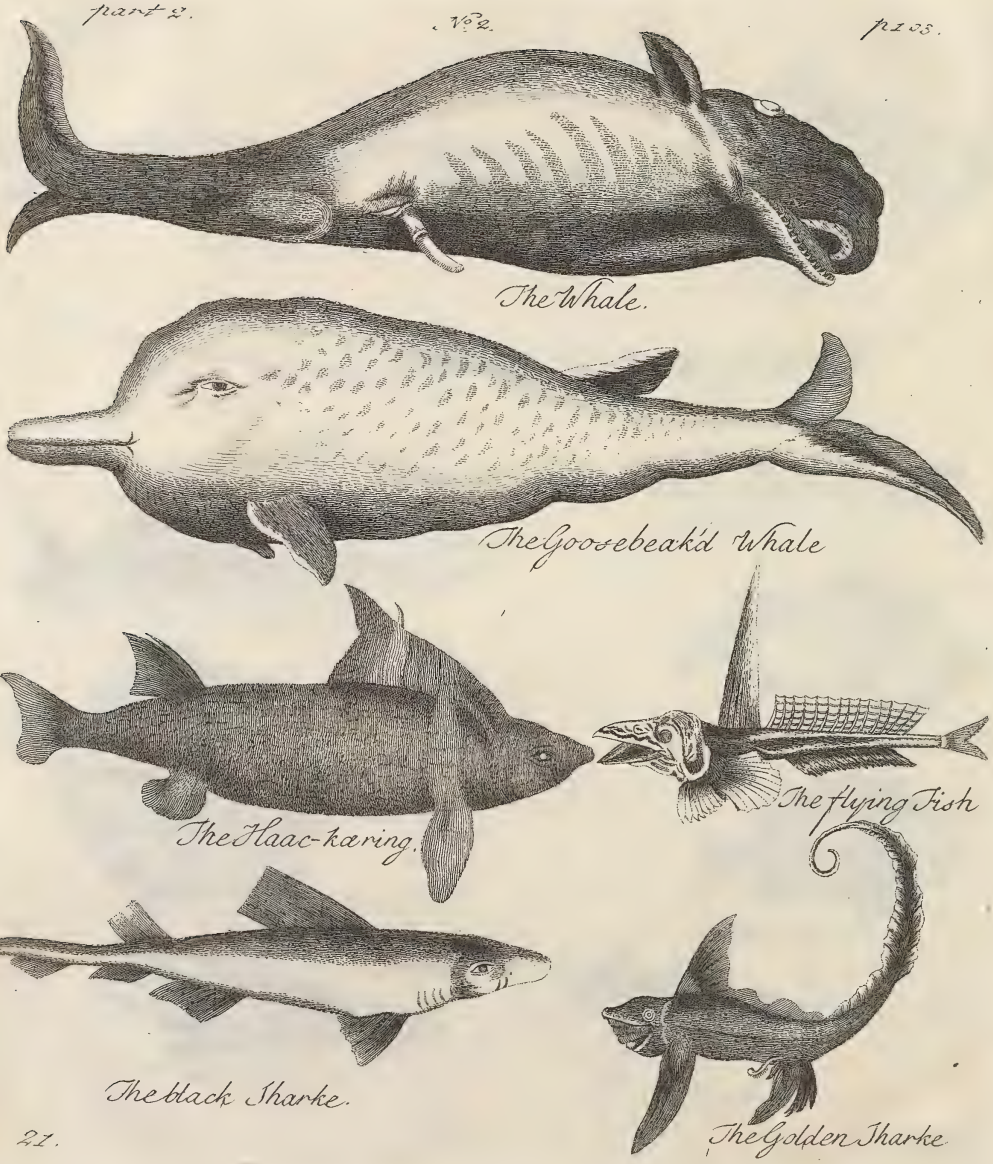
The Thornback

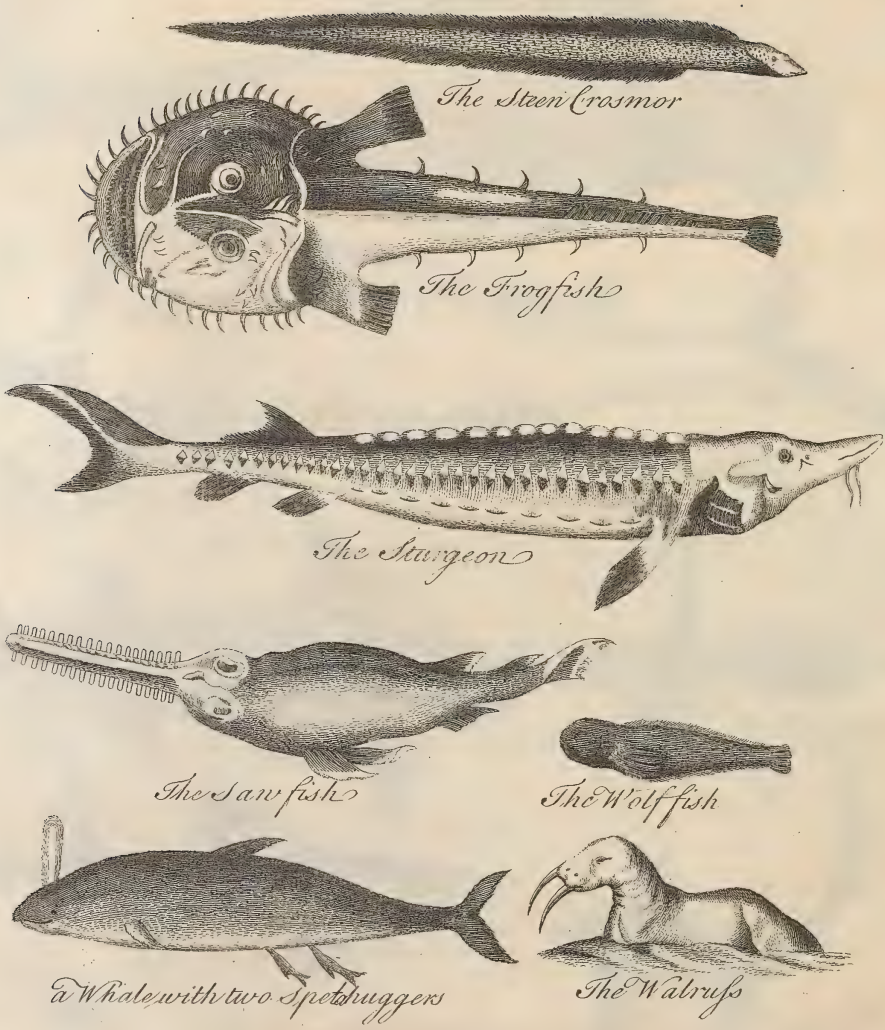
The Rod fish



The Sea Calf

The Gattorngine


The Whale.
The Goosebeakd Whale
The Haac-karing.
The flying Fish
The black Sharke.
The Golden Sharke


The Steen Crosmor
The Frogfish
The Sturgeon
The Saw fish
The Wolf fish
a Whale with two Spouts
The Walrus

# CHAPTER V.

## Concerning FISH and FISHERIES.

SECT. I. *The breeding of Fiſh, and their abundance in the north ſea.* SECT. II. *General obſervations on Fiſhes.* SECT. III. *The order and diviſion of the kinds.* SECT. IV. *Of the Eel, Lamprey, Perch and Gurnard.* SECT. V. *Of the Rock-fiſh, Blue-fiſh, Bleak, Bream, Anchovy, and others.* SECT. VI. *Of the Flounder and Plaiſe kind, and ſeveral others.* SECT. VII. *Of the Shark, its various kinds, the Turbot, and others.* SECT. VIII. *The Whale, its various kinds, the Whiting, Stittleback, and others.* SECT. IX. *Of the Sea-Fox, Carp, Sea-Calves, and others.*

### SECT. I.

NORWAY is as plentifully ſupplied as any country in the world with Fiſh, both of the ſalt and freſh waters: and as to the firſt, namely, the Salt-water Fiſh, I am in doubt if any place can equal us and Iceland, if we except North America, and particularly Terre Neuve; where the French, in this century, have eſtabliſhed a rich and advantageous Cod and Salmon-fiſhery, not inferior to our Norvegian one. Under the thick and continual flakes of ice, which cover the North ſea, from the 80th degree to the pole, ſeems the proper abode of the beſt kind of fiſhes, or their native country. There they breed in peace, and are protected from the devouring Whale. The lungs of this Fiſh are formed like thoſe of a land-animal, and therefore he muſt often fetch breath; conſequently he does not venture to go himſelf far under the ice: yet the other ſpecies of Fiſh, particularly the Herring, &c. which will be deſcribed hereafter as the moſt conſiderable, ſeem inſtigated by the Creator to come forth into the wide ocean for the ſervice of mankind *; and as ſoon as that happens,

Fiſh breeding near the north pole.

* Thoſe kinds of Fiſh, which are oviparous, or generated of ſpawn, come annually near the coaſt, and without doubt continue there ſome time; that they may, in the narrow channels and creeks, diſcharge their ſpawn with greater ſafety than in the wide ocean: for experience teaches that they come in full-roed, but go out to ſea thin and ſhotten. And what is moſt remarkable, that on their departure they ſwallow ſmall ſtones, to fill their belly, as it were to ſerve as ballaſt, in the room of the diſcharged ſpawn. When our fiſhermen find ſmall ſtones in the bellies of the Fiſh, they take in theſe ſhallow waters, they conclude that they are preparing for their departure, and go ſeveral miles out at ſea, on the ſand banks, to caſt their nets. Some are of opinion,

happens, towards the end of the year, the Whale, and his aſſociates; the Porpoiſe, Grampus, and the like, ſtand ready to execute God's decree, which is to hunt and terrify theſe ſmall Fiſh, and to ſend them where they are wanted. How this is done will be explained hereafter, in the article of Herrings, and the Whale, therefore I ſhall not detain my reader at preſent with thoſe particulars: they are, indeed, very remarkable, and of ſervice to ſhew God's wiſe and affectionate œconomy. I ſhall now in the firſt place obſerve, that as moſt kinds of Fiſh love beſt to be in the coldeſt waters, they are therefore more healthful and fine in Winter than in Summer; and are found not only in the greateſt quantities towards the north pole, but are alſo much fatter and finer there. When they, as has been obſerved by their annual ſpawning, are obliged to emigrate, and are on that occaſion driven about in inexpreſſibly large ſhoals by the fiſh of prey, which are God's inſtruments decreed for that purpoſe, they are ſent farther ſouthward; by which they loſe ſome of their ſtrength and fat. This happens in the long voyage they take; and they ſometimes approach the coaſts before they recover of their fatigue. When they grow better the females diſcharge their ſpawn, and the males their ſemen; by which they are again weakened and emaciated for ſome time. The firſt inhabited land from the north pole, that theſe emigrants or ſtrolling fiſh-colonies touch upon, next to Iceland *, is Finmarken and Norway; as alſo the north of Scotland, and the Orkneys. In theſe places they are found in ſuch multitudes, particularly the Herrings, Mackarel, and ſome other kinds of Fiſh, that it will appear incredible to my readers, who live in other countries, to whom I ſhall ſeem to have tranſgreſſed the bounds of probability; tho' I have not been able,

Peregrination.

Numbers.

opinion, that the Fiſh ſeeks the creeks, ſhores and ſhallows, for the ſake of freſher water, than that of the ocean, which is ſuppoſed to promote their breeding. The manner of their ejecting the Spawn, according to ſome obſervations, particularly with regard to the Salmon, is this; namely, the Fiſh bends itſelf quite crooked on one ſide, by which means the roe ſquirts out at the excretory duct: and when a ſhoal of females have thus diſcharged the roe, then the males come and diſcharge or eject their generative fluid in the ſame manner over it.

* In Iceland there is a great deal of fiſh catched, particularly of the Cod kind; which may be known by the annual ſhip-loads that are ſent to Copenhagen and Gluckſtat: and it is certain, that as Iceland lies near the place of their firſt departure, there might be caught ten times as many, if that country was not in ſuch want of wood, and conſequently of boats and ſhips. This conſideration ought to remind the Norvegians to take more care of their woods than they do at preſent here on the weſt ſide. Was it poſſible that we could deſtroy all our woods, then certainly our fiſheries would likewiſe be deſtroyed; for ſo many boats, and the ſeveral 100,000 planks which are annually required for that ſervice, would become too dear.

in

articles, to expreſs myſelf ſufficiently to convey a juſt idea of the vaſt multitudes that have been obſerved here. When I firſt came hither I could not believe it myſelf, till I was convinced by ocular demonſtration, as well as the teſtimony of many ſubſtantial witneſſes *.

There is no country in Europe fitter for the ſtudy of Ichtyology, or for enquiring into the natural hiſtory of Fiſh, than the dioceſe of Bergen, and the manor of Nordland in the dioceſe of Tronheim. When we obſerve the pains that Bellonius, Rondelet, Salvian, Aldrovand, Geſner, and beyond them all, Willoughby, took, to give a ſufficient account of this important part of the ſtudy of nature, we cannot help wiſhing that ſome of thoſe learned and indefatigable perſons, had been at theſe places to make their obſervations, where they certainly would have made more important diſcoveries than the reader has to expect from me; for it would require the whole life of an accompliſh'd man. I only write in general a Hiſtory of the Natural Curioſities in Norway, and conſequently cannot enlarge, as might be wiſhed, upon every article in particular; much leſs can I, as the learned authors before-mentioned have done, enter upon the anatomy of every particular Fiſh; yet, nevertheleſs, I hope that thoſe, who hereafter may endeavour to bring this knowledge to a greater perfection, will find more of the eſſential articles collected in this narrow compaſs, than in many larger, and otherwiſe more particular deſcriptions. What I here relate for a certainty may be depended upon, and will be found, on the niceſt examination, to be every where ſtrictly true: where I have been under the leaſt doubt, I have not poſitively affirmed the circumſtance.

## SECT. II.

Before I begin to treat of the ſeveral Fiſhes in particular, I ſhall quote a few lines out of Rollin's Treatiſe, entitled, Phyſique des Enfans, or the Study of Nature, for the Service of Youth, which conduce to the glory of our Great Creator, my principal end. In chap. ii. concerning Fiſh, he ſays, "How many "kinds of Fiſh of various ſizes do the waters produce! I con- "template all theſe, and it ſeems to me, that there is nothing "but a head and tail; they have no hands or feet, and their

General properties or qualities.

* From Karſund near Stavanger, quite to Tromſen in Nordland, are, with God's bleſſing, annually catched ſuch vaſt quantities of Herrings, the ſeveral kinds of Cod, and other valuable Fiſh, that this Commodity alone brings in, on a moderate calculation, a million of rix-dollars, and ſometimes more.

" head has no free motion. If I was to draw any concluſions " from their form, I ſhould think that there wanted every " neceſſary to ſupport life; yet, with ſo few external parts, " they are more active, quicker, and more ingenious, than if " they had many hands and feet. They know ſo well how to " uſe their tails and fins, that they ſhoot forward like an arrow " from the bow, and rather fly than ſwim. Fiſh devour one " another continually; how, therefore, it might be aſked, can " theſe inhabitants of the water ſubſiſt! But here God's provi- " dence has allotted means, and orders it thus, that their " breed and encreaſe ſhall be wonderfully great, and that their " fruitfulneſs ſhall by much exceed their neceſſity of devouring " each other; ſo that thoſe which are eaten by others, are always " very ſhort of thoſe which ariſe from the next brood *. When " I conſider how the ſmall Fiſh eſcape from the large, by whom " they are looked upon as a prey belonging to them, to hunt " as they pleaſe, I ſee the weak are much the nimbler; and are " always prepared to fly in places where the water is ſo ſhallow, as " not to allow the large to follow them; ſo it ſeems that the " Creator has made up for their weakneſs by giving them ſo " much circumſpection. How comes it that Fiſh can live, and " even be ſo healthy and ſo well in ſuch waters, that I could " not bear a drop of in my mouth? How do they, in the midſt " of ſalt, preſerve their fleſh from taſting of it? How comes " it that the beſt and fitteſt Fiſh for the uſe of mankind " approach the ſhore, and, as it were, offer themſelves to our " wants; when, on the contrary, others, that are not ſo uſeful, " keep farther off †? Why do Herrings, Mackarel, &c. all " which, in the time of their increaſe and growth, live in un- " known places, at certain ſeaſons appear in our ſeas about the " coaſts, as if to offer themſelves to the Fiſhermen, and even throw " themſelves into the nets, and on the hooks? Why do many " Fiſh, as the Lax, Oreder, Aal, &c. crowd themſelves in

* For that reaſon there are but few Sea-animals, as the Whale, Porpoiſe, and Grampus, that, according to the manner of land-animals, bring forth their young alive; the moſt are oviparous, or ſuch as breed from ſpawn: and contrary to Birds, which lay annually in each neſt a few eggs, each of theſe has annually many 1000 eggs to caſt on the bottom of the ſea. The author of Biblioth. Britannique, T. xix. P. i. p. 177. is not entirely of Mr. Rollin's opinion in this reſpect, with regard to God's providence and immediate deſign.

† In this the glory of God's providence is moſt remarkable; we ſee each Fiſh in its kind has, at certain fix'd ſeaſons of the year, a particular inclination to approach the land; and this always at a time when they are the fatteſt, and not emaciated by breeding: as the Salmon in the Spring, Mackarel after Midſummer, Herrings in the Autumn, Cod in the Winter, &c.

" heaps

" heaps up the mouth of rivers, to go ſtill further up, that " the land may participate of the benefits of the ocean, which " lies far off? Whoſe hand but thine, O Lord, guides them " ſo wiſely! tho' thy great care is ſeldom received with due " thankfulneſs." So far Mr. Rollin.

## SECT. III.

What I have before obſerved concerning the dividing and ranging of birds in different claſſes, is applicable to Fiſhes; namely, that altho' ſuch a method tends to give a clearer idea of them, yet there ariſes from it greater confuſion; for many, nearly allied in one reſpect, may have relation to another claſs in ſome other particular; ſo that theſe frequent exceptions render that method in itſelf uncertain, and liable to great perplexity. For this reaſon I ſhall here again follow the order of the alphabet, diſtributing the Fiſhes of Norway according to their names. Nevertheleſs, there are certain Fiſh and Sea-animals, which are ſo entirely diſtinct from the reſt of the inhabitants of the watery element, that one cannot conveniently mix them with the reſt: for that reaſon I have taken theſe laſt out of the propoſed alphabetical order, and put them each by themſelves in two chapters. Theſe are firſt the different kinds of Fiſh, which are ſurrounded with a ſtony or hard ſhell, wherein they live as if in a houſe, that grows with them: and, ſecondly, the various Sea-monſters, as they are called, or noxious animals in the North ſea; of which ſome have hitherto been held in doubt, and looked upon as chimeras. Theſe laſt, I hope, from this time, will have ſome credit with thoſe that have not thrown off all hiſtorical faith. When thoſe two claſſes are ſeparated, then the reſt will follow one another, according to the order of the alphabet, as has been ſaid above. Order and diviſion of Fiſhes.

## SECT. IV.

Aal, the Eel, Anguilla, is a long and round Fiſh, very well known every where; it is beſt and fatteſt in freſh waters, but it ſeldom grows there above 24 or 30 inches long; but, on the contrary, the Norway Sea-Eels, which are leaner, are four or five ells long, and are much like a ſnake, according to the Latin name Anguilla, which ſignifies a kind of ſnake, or ſomething allied to that ſpecies *. They thrive beſt in muddy waters, and are Aal.

* A friend of mine has told me, that he has ſeen an Eel two fathoms long, and, when cut up, an ell wide; his people took it to be a ſnake, and would not eat it.

fond

fond of fleſh of any kind; but that they ſhould generate in theſe waters, without being produced from eggs or ſeed, which has been ſaid; as alſo, that there is no difference of ſexes amongſt them, appears to me improbable; tho' an old opinion, and received by moſt natural hiſtorians. Francis Willoughby is himſelf in doubt of this matter: he ſays, in Hiſt. Piſc. Lib. iv. cap. iv. p. 110. Anguillam neque marem eſſe neque fœminam, neque prolem ex ſe generare tradit Ariſtoteles, & alibi nec per coitum procreari, nec parere ova, nec ullam captam unquam eſſe, quæ aut ſemen genitale aut ova haberet, &c. Rondeletius, vidiſſe ſe anguillas mutuo corporum complexu coeuntes affirmat, neque putare ſe partibus ad gignendum neceſſariis prorſus deſtitutas eſſe, inferiore enim ventris parte, & vulva in fœminis, & ſemen in maribus reperitur, ſed pinguedine multa circumfuſæ hæ partes non apparent. This opinion of Rondelet, which has been rejected by many, is confirmed by our Norvegian fiſhermen; who ſay, that out of the Eel's belly are ſeen ſometimes young Eels hanging, as if in their birth. Eels are catched here in the night, as they are in Denmark, partly with hooks, and partly with a kind of buckets, wide at the entrance, and runs down ſloping, and ſo contrived within, that they do not eaſily find a paſſage out; in theſe they put Herrings, or other Fiſh, by way of bait. Eel-fiſhing is not of ſuch conſequence, as to carry on a foreign trade with.

Aalequabbe. The Aalequabbe, or Lamprey, is generally not above twelve inches long; otherwiſe it is very like the common Eel, except that it is remarkably different as to the head and mouth, which is very broad, and much like a frog's. In this, inſtead of teeth, there are two ſharp bones like knives or ſciſſars; about the middle of the belly is a white ſpot, the reſt being brown. They have as little roe as the common Eel, and they bring forth their young alive: this is a fact beyond doubt.

Aaſkiær-Niot. The Aaſkiær-Niot, the Gurnard, is a ſmall Sea-fiſh, not above ſix inches long, of a brown colour, ſpotted with a ſhining white, with a head almoſt ſquare and ſharp at the end. In taſte it is not unlike a Mackarel; it is catched with a line, and when taken out of the water is heard to grumble and ſnort, which is very different from all other Fiſh.

Aborre. The Aborre or Perch, Perca, is a well-known Fiſh; it is found in the freſh-water lakes in Norway, particularly eaſtward, large and fat: it is called here by ſome Tryde, by others Skibbo.

Ankertrold. Ankertrold. See the following chapter, Krake.

SECT.

## SECT. V.

The Berggylte, the Rock-fiſh, is a ſalt-water Fiſh; it has ſcales and fins like a Carp, and is of a reddiſh colour: 'tis called by ſome the Norvegian Carp; it is commonly from nine to twelve inches in length, and about ſix broad. This Fiſh is fat and well-taſted, but 'tis better cold than hot: they are generally caught under the perpendicular rocks, or projecting cliffs, with a hook. Berggylte.

The Blaaskaal, the Blue-fiſh, called alſo Blaaſtak, alſo the Siogumme, is like the Bergylten in every thing, excepting that it is leſs, and is of a blue and green colour, with pretty ſtripes, ſuch as are upon a Mackarel. Blaaskaal.

The Blankenſteen is a Sea-fiſh, ſo called for its ſilver-colour'd bright ſcales; in ſhape it is very much like a Herring, but it is ſomething longer, and narrower towards the tail: it is alſo caught with a line, but not in any great quantity, and is not much regarded. Blankenſteen.

The Bleege, the Bleak, a well-taſted Fiſh, frequent both in ſalt and freſh water, tho' moſt in the laſt. In ſhape and ſize it is like a Dace, but it differs from it in the unſpotted ſilver colour. Bleege.

The Braſen, the Bream, Brama, is well known, and found in the eaſt country. Braſen.

The Briſling, Encraſicholus, the Anchovy, is properly of the Herring kind, but much leſs; the largeſt is about four inches in length; 'tis broadiſh, fat, and delicious; they are caught every where in the warm Summer months, in ſmall maſh'd nets; ſometimes they take an incredibe quantity at a draught. They are not only eaten freſh, but are ſalted, and put up in barrels with ſpices, and ſent to ſeveral foreign countries, where they are called Anchovies, and they pay a good price for them. Theſe only differ from a ſmall Herring by the roughneſs of the belly, when they are ſtroaked with a Finger, from the tail upwards. Briſling.

The Brigde, the Fin-fiſh, is a large Fiſh, 40 feet or more in length; ſome account them of the Whale kind, others of the Porpoiſe. Their liver alone yields ſeveral casks of train oil; on their back they have a high, round, and ſharp bone, with which they tear open other Fiſhes bellies; and they are covered with a kind of hair, ſomething like a horſe's main; they are often ſeen about the fiſhermens boats, who are as much afraid of them as of the moſt dangerous ſea-monſter. Sometimes they are caught, tho' ſeldom, and that is when they get into a creek, and entangle Brigde.

themſelves in the fiſhing-nets: tho' they carry the nets away, they are ſo encumbered by them, that one may eaſily ſtick them with a ſpear.

Broſmer. The Broſmer, is a good ſea fiſh, of a moderate ſize, with a ſhort and round head, and a ſlippery ſkin, like an Eel, but the fleſh is firm, and agreeable to eat; the roe alſo is counted very delicious. Our fiſhermen ſay they live very much amongſt the ſea-ſhrubs, and feed on them. They are caught moſtly in the Summer months, in deep water, with lines. They are ſalted down, or dry'd, and then exported. Perhaps this is the ſame Fiſh that is called in France, Brame de Mer, the Sea-bream; but I only gueſs ſo by the name.

## SECT. VI.

Elveritze. Elveritze, a ſmall Fiſh, which has its name from rivers wherein they are generally catch'd.

Fiſke Kong. Fiſke Kong, King of the Fiſhes: two kinds of Fiſh are called by this name; one is of the Cod, and the other of the Sea Bream kind. This laſt is not much different from the ordinary ſort, except that it has a lump as big as a man's fiſt on the head, which fanciful people ſuppoſe to be beform'd like a crown; from whence the fiſhermen have taken the liberty to call him King of the Fiſhes.

Flynder. Flynder, the Flounder: of this Flat-Fiſh, which includes a great many branches, we have here chiefly four ſorts; namely, The Hellebut, or Plaice (not the large Helle-flynder, which is called here Queite, and will be taken notice of hereafter): this is a pretty large and roundiſh Flounder, fat and fleſhy, with red ſpots on the ſkin. 2. The Krobbe-flynder, ſomething leſs, black and rough, or full of ſmall prickles: this has very firm fleſh. 3. The Sand-flynder: this has ſcales on the ſkin, and is grey on one ſide, but, like the reſt, white on the other, or under ſide. 4. The Flirer: theſe are the leaſt, but the beſt taſted of all: they are partly caught in nets, partly with fiſhing hooks, and ſometimes they are ſtuck with a ſmall bearded lance, which is done thus: when the fiſhermen row their boats over ſandy ground, where the Flounders are ſeen in clear weather lying in heaps together, they drop a line with a heavy lead to it, under which the little lance is fix'd, which, by the weight of the lead, ſticks in the Flounder, ſo that he muſt follow the line up: by this method they ſoon fill the boat with them. In Nordland and Sundmoer this Fiſh is found in the greateſt perfection; it is dry'd and exported with a good profit. Th. Bartholinus mentions (in his Hiſt. Anatom.) a remarkable Flounder,

der, marked with a croſs on one ſide. "Paſſer piſcis 1650, a piſcatoribus Bergis Norveg. captus, ſignum crucis craſſioris in ventre gerebat manifeſtum idque in ſumma cute. Ad uſum menſæ, culinæ D. Jani Schelderupii, Epiſc. Bergenſis, affinis mei honorandi, inferebatur. Sed ancilla, viſo crucis ſigno, perterrita, cultrum ſuſpendit, piſcemque illuſtrem plurium curioſitati reſervavit. Anguli crucis & latera æqualia, ſuperficies plana & cum cute æqualis, &c. in exſiccato piſce diſparuit fere crux. Cent. ii. Hiſt. 33, p. 225." Yet it is not uncommon to ſee upon Flounders, Plaiſe, Square Fiſh, and other Sea-Fiſh ſkins, the figures of ſtars, circles, ſquares, and other marks, which give them a particular aſpect.

Floy-fiſk, or Flying-fiſh, is ſo called from his flying above the water: the largeſt I have ſeen are hardly a foot long. This Fiſh has a pretty large, tho' thin and light head; the mouth I have always found open, perhaps to catch the air, and lighten themſelves in ſome degree with it; the body is ſmall, roundiſh, and runs tapering towards the tail: it is nearly like a large Herring in ſhape. Beſides the uſual fins, they have under their necks three broad and pretty long ones, of a different and more ſubtil ſtructure: theſe are nearly as thin as a fly's wings, but they are ſtrengthened with half a ſcore rows of bone, running between the two membranes. On the back part of their neck they have alſo a wing, or flying fin, about ſix inches long, quite erect; and lower down the back, another ſhorter, but broader. Theſe wings are the gift of nature to ſave themſelves with, when purſued by thoſe that are too powerful for them. They are ſeen in their flight to raiſe themſelves ſeveral feet above the water, and purſue their courſe the length of two or three gun-ſhot, then they muſt drop, becauſe their wings grow dry, which are of no uſe to them any longer than they hold moiſt *.

Floy fiſk.

Privilege for the weak.

I do not know whether thoſe Norway Flying-fiſh, which were preſented me at Bergen on Sundmoer, may be accounted the ſame

* If it was not for the natural property of the wings, which makes it impoſſible for them to fly far, then I might agree with thoſe expounders of Scripture, who are of opinion that the great quantity of Selavim, which, in Numbers, Chap. xi. v. 31. is generally tranſlated Quails, and which were brought by a great wind from the ſea to the camp of the Iſraelites, were not Birds, but Flying-fiſh, according to Rudbeck's, Ludolf's, and Zeltner's opinion; to which kind alſo the foregoing 22d verſe ſeems to allude; as alſo what directly follows, in the 32d verſe, that they were ſpread, and hung up about the camp; which ſeems to agree beſt with the manner of curing Fiſh that is to be dry'd: if it be ſo, then we muſt firſt obſerve that thoſe Oriental Selavim have more ſtrength in the ſtructure of their wings to ſupport themſelves in a long flight, than our Norvegian Flying-fiſh.

with

with thoſe Gaſp. Schottus, in his Phyſica Curioſa, Lib. x. Cap. 21. p. m. 1127, calls " Hirundines Aquaticæ, Vand Sualer, Hirundo hæc aquatica a Græcis vocatur χελιδὼν, a maris Adriatici accolis & a Siculis Rondela, Rondola, Rondinella, ab Hiſpanis Peſce volador. Volant extra aquam ne piſcium majorum præda fiant; demiſſé tamen quemadmodum aves e flumine aquam hauſturæ. Volantes ſæpe vidi in mari Siculo & Tyrrheno, manibus tamen nunquam contrectavi. Volant quamdiu alæ hument; cum ſiccantur ſtatim decidunt."

The deſcription that he adds from Geſner and Rondelet agrees in moſt things with our Norvegian Flying-Fiſh, yet it differs in few particulars; whereas he gives his Vand-ſvale Squamas Aſperas rough ſcales; on the contrary, our Norvegian Fiſhes have a ſmooth skin, and no ſcales, unleſs they are very ſmall, or kept till they are dry; they have never come to my hands freſh out of the water, and therefore I cannot ſay for a certainty of what colour they are. He ſays the Italian ſort are of a dark red, and ours ſeem to be of a dark blue.

Forrelle. The Forrelle, is a well-known and well-taſted Fiſh, ſomething different from the Orreten, partly becauſe it is leſs, and partly that between the black circles on the skin there are ſome red ſpots. They are caught moſtly here in ſmall rivulets; but when they grow larger, they go into the lakes, or deeper waters.

Graaſey. Graaſey. See Sey.

Gedde. The Gedde, are here very large, and well-taſted, yet I have not ſeen any ſo large as thoſe which Undalinus, p. 36, ſays are found in the lake Store Mios, on Hedemarken, namely, five or ſix feet long: the ſame lake may be reckoned to be the beſt ſtored with Fiſh of any freſh water in the world; and there are not leſs than twenty-three kinds of fiſh that frequent it.

Gorkyter. A Fiſh called the Gorkyter is mentioned by Mr. Ramus, p. 252, but it is quite unknown to me, tho' I have enquired very carefully after it. Poſſibly 'tis the name that puzzles me, for that differs according to places.

Giors, or Sandert. The Giors, or Sandert, is an excellent, and not an exotic, tho' a ſcarce fiſh: it is found in the freſh-water lake, Store Mios, before mentioned.

Guld Lax. The Guld Lax, Trutta, the Trout, is a ſmall well-taſted Fiſh, in form almoſt like the common Fiſh, of which I ſhall ſpeak at large in its place, under the name Lax: but this is very ſmall, ſeldom above nine inches long, and the mouth is proportionable. Theſe are ſo much leſs than the Salmon, that they are caught in nets.

nets. In Nordland they make a ſort of diſh of them, cutting the fleſh into long ſlips, and drying them; which is more delicate than that of Helle-flynders; or elſe they pickle them, and eat them as they do pickled Herrings.

## SECT. VII.

The Haae, the Shark: this is a very extenſive tribe; the ſeveral kinds are very different in ſize, like the dog-kind, which creatures they alſo reſemble in fierceneſs and voraciouſneſs, deſtroying other Fiſh. Hence the Shark is called Canis Carcharias: but they moſtly reſemble the dog-ſpecies in this; viz. that there are ſome very large, even ſeveral fathoms in length, and ſome very ſmall, about two feet when full grown: but before I deſcribe each of theſe ſorts in particular, I ſhall ſpeak of them in general; namely, firſt, that they have no bones, properly ſo called, excepting that of the back, but only a cartilaginous or griſtly ſubſtance, inſtead of bones: in the ſecond place, they do not, like moſt kinds of fiſh, eject their ſpawn, but are viviparous, and, like the Whale, bring forth their young alive, five or ſix at a birth, from a ſort of umbilical opening. In its belly are a kind of eggs, as large as a hen's; but they are ſoft, and have no white. They hang together as it were by a thread, and ſerve for food ſometimes for the poorer ſort *. In the third place, their skin is hard, rough, and full of a vaſt number of ſmall prickles; their fins are large, broad, and thick, which goldſmiths, ivory-turners, carvers, &c. make uſe of to poliſh their work. The Gulhaaen, one of this kind of fiſh, which ſhall be preſently deſcribed, has not ſuch a rough skin, but in that particular is like other Fiſh. The fourth obſervation I ſhall make is, that the mouth of the whole tribe of Sharks is not placed like that of any other kind of Fiſh, but underneath a pretty long ſnout, which juts out, deſigned, as it were, to prevent their deſtroying other Fiſh in too great quantities; for they are obliged to turn upon their backs when they would devour their prey, unleſs it happens to ſwim juſt under them. This wiſe contrivance of Providence tends, no doubt, to the preſervation of other Fiſh in ſome Meaſure, becauſe the Shark is the fierceſt and moſt voracious of all the Sea-fiſh †. He bites very keenly, and has a vaſt appetite:

Haae.

God's providence.



* The young Shark lies in a different poſture from that of moſt Fiſh of the viviparous kind in its mother's womb, and has a communication by a ſmall tube, with the egg above-mentioned, and receives its nouriſhment from it to the time of its birth.

† Mr. Derham entertains the ſame opinion of God's providence in this particular, in his Phyſico-Theolic. B. iv. c. 14. ſpeaking of the Shark, or the Canis Carcharias, he

he devours every thing that falls in his way, particularly the Mackarel, and is extremely fond of human fleſh *. I am therefore inclined to agree with thoſe who are of opinion that the large Fiſh which ſwallowed Jonah was rather a great Shark than a Whale, whoſe narrow throat ſeems very improper to ſwallow a whole human body. After theſe general obſervations, I ſhall briefly treat of each kind of Sharks in particular.

The common Shark is of a middling ſize, ſeldom above three or four feet long, and has a ſharp bone on the back part of its neck, like a boar's tuſk: its ſkin is of a grey colour, and their fleſh not ſo delicate as to be coveted for the table, unleſs when there is a ſcarcity of other proviſion, and then they flea it, and dry it in the ſmoak. The beſt part of it is the liver, which makes the beſt ſort of train oil. In the Spring, when the Herrings and Cod appear on the coaſts, the Shark, together with other Fiſh of prey, drive them before them, and ſo execute the will of the beneficent Creator. Sometimes theſe Fiſh come in ſuch large ſhoals, that they interrupt our regular fiſheries; for one has hardly thrown out the hook, before a Shark faſtens upon it, and diſappoints the fiſherman, who was in expectation of a Cod.

Gul Haae. The Gul Haae, or Haae Gule, differs from the laſt mention'd in the ſmoothneſs of the ſkin, as has been obſerved before; as alſo in colour, which is a bright yellow. Hence it has the name Gul Haae; i. e. the Golden Skark. It differs remarkably from other Sharks as to its tail, which, in the other kinds, reſembles that of a Salmon, excepting that one of the points is ſomething longer than the other; whereas the tail of the Gul Haae is longer than its whole body, and grows gradually narrower, till it ends in a point. On account of this tail it is called by ſome the Sea-Rat, of which it has ſome diſtant reſemblance, eſpecially when the fins are bent down under its belly, and have the appearance of legs. The head is very large, and the mouth like that of the other Sharks. On the back part of the neck it has a ſtrong and ſharp bone, about four inches long, bending backwards: but the moſt remarkable thing in this Fiſh is his double generative

he ſays, "Take my worthy friend Dr. Sloane's obſervation: It hath this particular to "it, with ſome others of its tribe, that the mouth is in its under part, ſo that it muſt "turn the belly upwards to prey. And was it not for that time it is turning, in "which the purſued fiſhes eſcape, there would be nothing that could avoid it; for it "is very quick in ſwimming, and hath a vaſt ſtrength, with the largeſt ſwallow of "any Fiſh, and is very devouring." Sloane's Voyage to Jamaica, p. 23.

* Concerning the inhabitants on Viiſiden, or Bahus-Lehn, Petrus Undalinus aſſerts, p. 24, what one would hardly think credible; namely, that the Sharks (which were then very numerous in thoſe parts) are ſo fond of human fleſh, that they have killed ſeveral fiſhermen.

member;

member; for, as I have before obſerved, this whole tribe is not oviparous, but bring forth their young alive. This has his genitals in their proper place; but whether they all have them double I do not know: but as for this kind I can affirm, from my own obſervation, that the male has a double penis, and the female a double womb. If the liver of the Gul-Haae be put into a glaſs veſſel in a warm place, it will diſſolve to an oil, and this is an excellent unguent for all wounds and bruiſes. An experienced apothecary aſſured me, that he prefers this unguent to all other remedies which his ſhop affords, for external applications.

The Sort-Haae, which may likewiſe be compared to the Sea-Rat, differs from the former in ſize and colour, for it is much leſs than the Gul-Haae; and is coal black on the back, and of a blueiſh colour under the belly. Hence it is called by ſome Blaa-Mave, and by others Morten-Blanke: the tail and the liver are like thoſe of the Gul-Haae; but the latter is drier, and does not yield ſo much oil. So much for the ſmall Sharks; I now come to treat of the larger ſort; namely, Sort Haae.

The Haabrand and Haae-Kierling, or, as the Norvegian peaſants call them, Haae-Kiæring, are a ſort of hermaphrodites, or of both ſexes, according to the opinion of ſome writers; tho' I will not affirm it for a certainty. The Haaebranden is but 14 or 15 feet long at the moſt; and is formed like the other Sharks: it is of a black colour. The fleſh of this kind is good for nothing; the liver produces train oil, but inferior to that mentioned above. Haabrand.

The Haae-Kiæringen; this is a third ſort, larger than the preceding: it is 19 or 20 feet long; ſo that it is as much as a horſe can carry, even after the liver is taken out, which is almoſt the only valuable part of it, and often yields two casks of train oil, and ſometimes more. This may ſeem an extraordinary quantity, but I am aſſured of the truth of it, by thoſe who make it their buſineſs to extract it. They alſo cut off from the belly of it ſeveral ſlips of fat, which are dried and ſold to the Uplanders, who live moſtly on coarſe cheap food. The skin is tann'd and prepared by the peaſants for horſe-furniture, like the skin of the Sælhunde. They catch theſe with a hook, which they bait with a piece of ſtinking carrion; there muſt be an iron chain of about four or five feet long faſtened to the hook, or elſe he'll cut the line, as they ſay, with his rough skin, which, as I have before obſerved, is peculiar to the Shark, or more probably with his teeth. Haae. Kiæring.

The

Haae Mæren. The Haae-Mæren is ſtill larger, of the ſame ſhape and make with the preceding; of a blue and green colour, like a Mackarel. The tail of this kind is more than two fathoms wide; by which one may form an idea of the ſize of the body, which, according to the account of many eye-witneſſes, is eight or ten fathoms long; for which reaſon this ſpecies is by ſome reckoned of the Whale kind, but it is truly and properly a Shark; eſpecially as it is a cartilaginous Fiſh, and has no bones, excepting one in the back, and that but ſmall in proportion to its ſize. The liver is but little bigger than that of the Haae-Kiæringen, with which this Fiſh is confounded by ſome; but thoſe who are judges eaſily make a diſtinction. This Fiſh is ſtuck with a harpoon, and will ſometimes accidentally fall into a Salmon-net, and carry it off; but he is often ſo frightened that he dares not ſtir, and is killed without much trouble, and dragged on ſhore with ropes, as they do the Haae Kiæringen. They tow it behind the boat if they want any thing more than its liver; otherwiſe they take that out, and throw the body into the ſea. This Haae-Mæren ſeems to be the ſpecies which Willoughby ſpeaks of, Lib. iii. §. i de Piſcibus cartilagineis longis, cap. i. p. 47. in theſe words: "Canis carcharias ſeu Lamia Rondoletii galeorum omnium maximus eſt, nam aliquando ad tantam magnitudinem accreſcit, ut currui impoſita vix a duobus equis vehi poſſit. Vidimus, inquit Rondoletius, mediocrem 1000 librarum pondere. Niceneſes vero teſtatos ſibi eſſe refert Gillius, ſeſe iſtiuſmodi piſcem cepiſſe ad 4000 librarum accedentem, & quod magnam admirationem habet, in ejuſdem ventre ſolidum hominem reperiſſe, ſimileque quid Maſſilienſes ſibi narraſſe, comprehendiſſe inquam, aliquando, in quo loricatum hominem inveniſſent." This confirms my former conjecture, namely, that it was this Fiſh which ſwallowed up the prophet Jonah. To this tribe alſo belongs the moſt ſurprizing and deformed Fiſh, called Kors-Haae, the Zygæna, or the Hammer-headed Shark; which, as it belongs to this ſpecies, I will not omit, tho' it is ſeldom ſeen in the Northern ſea. The body of this kind is like the Haae-Kiæring before deſcribed; but from the form of his head it is called the Kors-Haae: its ſhape reſembles a crutch, and there are two great eyes at the ends of the tranſverſe part of the croſs, at ſome diſtance from the head.

Hav-Heſt. Hav-Heſt. See Val-Ros.

Helle-flynder. The Helle-flynder, the Turbot, Hippogloſſus Rondeletii & Geſneri, which is otherwiſe called Queite, and alſo Styving, is formed like another Flounder; the belly, or lower ſide, white; but

but the back, or upper ſide, is of a dark brown; on which are placed both the eyes, and not one on each ſide, like thoſe of other Fiſh. The ſize of the Turbot in theſe ſeas is ſo great, that it will cover a large table: the fleſh is exceeding good when freſh, and if it be cut to pieces and ſalted down, one Fiſh will fill a cask. They prey upon other Fiſh; and when they are pinched for food they will devour one another's tails, as has often been ſeen. In the Hiſtory of Birds I have obſerved, that when the eagle ſtrikes its talons into the Turbot's fleſhy back, and cannot get them out again, he is dragged down to the bottom of the ſea, and often putrifies on his back. This Fiſh alſo ſtrives ſometimes to be revenged on mankind, though nature has not furniſhed him with offenſive weapons. This may be concluded from what was related to me by a fiſherman, a perſon of credit and integrity. This man ſtriking at a Queite, or Turbot, miſs'd his aim, and fell overboard, in two or three fathoms water. He came down upon a clear ſandy bottom, where he was ſeen by his companions, with the huge Turbot ſpreading himſelf upon him, to preſs him down. He lay in this poſture till his companions, with their boat-hooks, came to his aſſiſtance. They have ſuch ſurprizing ſtrength in their tail, that the fiſhermen muſt take great care when they happen to take a very large one, that he does not ſtrike the deck of the boat, for he will ſometimes beat the boards till they are looſe, and might poſſibly overſet the boat. The Turbot comes, like other kinds of Fiſh, near the ſhore, at certain ſeaſons, particularly in the Spring; but it is caught generally out in the main ſea, or along the ſides of the ſand-bank that projects out to ſea, beyond all the iſlands, cliffs, &c. that cover our coaſt. They catch them here by means of a great number of long ropes, each having a large fiſhing-hook faſtened to its extremity. All theſe are dragg'd at the bottom, and joined to one main line, at the end of which is a log, by way of float, to mark the place. When this has lain all night, the next morning they expect to draw three, four, or five of theſe large Turbots at a time; the greateſt part they ſalt down; from the reſt they cut off the fat from their fins, and ſlices of their fleſh, which are brought here chiefly from Andenes and Tromſen, in Nordland, and then they are exported. The French, who have begun a Turbot-fiſhery in North America, have alſo learnt to cut off the fat about the fins, and theſe ſlices from the body of the Fiſh. We ſeldom or never fiſh for them after Midſummer-day, becauſe they are grown ſo fat then, that their fleſh is ſpoiled by driving them about, &c. A remarkable

God's providence.

inſtance of the care of Providence is obſerved by Mr. Anderſon, in his Account of Iceland, §. lxii. p. 88, namely, that theſe Turbots, which, like other Fiſh of the Flounder-kind, are, by their form, the moſt unfit to ſwim, having no air-bladder, and therefore muſt keep at the bottom in ſtormy weather, and ſtick in the ſand, are, for that reaſon, provided with a skin, or membrane, which draws over their eyes, to keep the ſand out of them. This, as well as the reſt of the Flounder-kind, feeds chiefly on young Crabs, and ſuch ſmall Fiſh that crawl upon the ſands, and cannot eaſily eſcape from them: the Sea-eggs, or Sea-urchins alſo, which ſtick to the cliffs, become an eaſy prey to them, and is a food of which they ſeem very fond *.

Horn-fisk.

The Horn-fiſk, or Horn-give, the Muræna, is in ſhape round and long, like an Eel; it has greeniſh bones, and is not ill-taſted. It is found here, but not in ſuch numbers as in Denmark, and our fiſhermen do not much regard it.

Horr.

The Horr, which we call Horke in Denmark, is a ſmall freſh-water Fiſh, which ſome people reckon to be very delicate; but they are ſo full of bones that it is troubleſome, and even dangerous, to eat them.

## SECT. VIII.

Hval-fisk.

The Hval-fiſk, or, as we call them here, Qual, the Whale, Balæna, is a Fiſh very well known, by name at leaſt, to every body, though but few know any thing further of them, there being ſcarce any but the fiſhermen who have ever ſeen them. I have never had the opportunity of ſeeing a Whale except once, at Sognefæſte, and then he only ſhewed his back above the water, which ſeem'd to be above forty feet long; and immediately he div'd again. The whole Whale-kind are divided by ſome into ſix or ſeven, and by others into twice as many ſpecies †; tho' theſe authors under that name comprehend at large all the viviparous Fiſhes, which are all formed in the womb of the dam nearly in

* Something very ſingular here occurs to me, related by Mr. Aſſeſſor Frius, concerning a freſh-water river, near Gaarden Stafseng, in Næſne Sogn, on Helgeland, in which they ſometimes catch Turbot, and other Sea-fiſh, tho' this river has not the leaſt viſible communication with the ſea; but it muſt have it by ſome ſubterraneous paſſage. The ſame is related of a river in Hameroe Kald, Saltens Fogderie, and likewiſe of Lille Mios, in Valders, many miles from the ſea.

† From a manuſcript which a learned Icelander ſent Ol. Wormius, Th. Bartholinus, Cent. iv. Obſervat. 24, reckons no leſs than 22 ſorts of Whales, which are caught in the North-ſea; but what certainty there is in this account I will not pretend to ſay. Rondeletius, Belſonius, Schonveld, Faber, Cluſius, Tulpius, and others, knew only thoſe call'd Balæna magna, Balæna vulgaris, Balæna dentata, Cete, Phyſeter, & Unicornu. My plan obliges me to treat of thoſe only that viſit our Norway coaſt, tho' their proper abode is ſeveral hundred miles from hence, towards the north-weſt.

the

the ſame manner. "Cetacei piſces, auctore Ariſtotele, ii proprie "dicuntur, qui magni ſunt & perfectum animal ex ſemine, non "ex ovo, gignunt, ut Delphini, Balænæ, Phyſeteres. Quanquam "alii, tum Latini, tum Græci veteres, cetaceos acceperint pro "grandibus cujuſvis generis piſcibus. Eoſdem Latini belluas "marinas etiam vocarunt, ab immanitate opinor, & magna cum "terreſtribus ſimilitudine, nam eodem modo concipiuntur & gig-"nuntur, & pulmones habent, renes, veſicam, teſtes, mentulam, "fœminæ, vulvam, teſtes, mammas;" ſays the learned Fr. Willoughby, L. ii. c. 2. p. 26. He adds alſo a little further, that ſome are of opinion the reaſon why the Whale, which formerly was ſeen almoſt every where in the ocean, is found now only in the North ſea, is its fear of the ſhips, which, ſince the opening of the trade to the Indies, ſail about the Spaniſh and African ſeas: it is therefore ſuppoſed that they have deſerted thoſe ſeas upon that account: but this opinion has little probability; for we are ſenſible that great numbers of ſhips ſail alſo on the North Sea; and particularly they muſt be diſturbed by the many great ſhips that are ſtationed annually on that fiſhery. By accident perhaps theſe Sea-monſters may carry themſelves too far ſouthward; but their proper reſidence doubtleſs has been, as it is now, in the North-ſea. They are annually ſeen along the weſtern coaſt of Norway, about January; but they are not received as enemies, nor do they meet with any oppoſition, which indeed is not ſuffered *, but as friends and allies; tho' this circumſtance be unknown to them. They are ſent by the all-wiſe Creator ſeveral hundred miles, to ſerve as his inſtruments, to drive numberleſs ſhoals of Herrings, Mackrel, and other Fiſh, into the creeks formed between the rocks and iſlands that cover the coaſt, and about the ſand-banks, to be the ſubſiſtance of many thouſands of people. They likewiſe cauſe the importation of a great deal of wealth, either in ſpecie or merchandize. When our peaſants and fiſhermen obſerve the Whale at ſeveral miles diſtance, which they know by the appearance of ſmall water-ſpouts in the air, which they eject through the openings in the head, by reſpiration, they conclude by this joyful ſignal, that the Winter-harveſt or fiſhery is approaching. Immediately the ſea appears covered,

God's providence.

* There are killed however in Sunds pariſh, juſt by Bergen, and in ſome other places, every Spring, ſome of the ſmall ones, of 30 or 40 feet in length, which venture too far in the creeks, and ſpoil the fiſhing-nets. They are ſtuck with harpoons, the points of which the ſmiths know how to poiſon, ſo that about the wound there will appear a ſpot as big as a ſmall diſh in circumference, which runs thro' the ſkin, fat and fleſh; which laſt is turn'd quite white, and often mortify'd. The fleſh otherwiſe is of a dark red, and appears almoſt like beef: it is eaten by our peaſants, who have ſhewed it me, and aſſured me that it taſtes well, and is wholſome food.

covered, as it were, with a large city, with a great many chimnies ſmoaking; for the ſhoal of Whales generally conſiſts of ſome thouſands, and they ſtretch along the coaſt, chiefly from Stavange or Karmſund, to Chriſtianſund, in the dioceſe of Tronheim, which is about ſixty Norway miles. The high water-ſpouts before-mention'd are thrown up by the Whale, on his fetching breath. Every time he breathes he comes to the ſurface of the water; for all the cetaceous kind have lungs, and breathe like quadrupeds, requiring frequent ſupplies of freſh air.

The Whale, for its uſefulneſs in driving out the ſmall Fiſh from their ſhelter, is called here the Herring-whale, of which the ſmaller kind moſtly frequents our coaſt. The large Whale, or Balæna vulgaris, ſometimes, tho' not often, overſhoots himſelf, and comes aground, or ſtrikes upon a rock, and expires there. He then becomes the property of the owner of the land, according to the Norvegian law. Their length amounts frequently to 60 or 70 feet*; their ſhape pretty much reſembles that of the Cod: it has a large head, and ſmall eyes in proportion: on the top of the head there are two openings, or holes, through which it ſpouts out the water taken in, as it breathes, like a fountain, which makes a violent noiſe.

Form and Shape.

The ſkin of the Whale is ſmooth, and not very thick; the colour of the back is dark, variegated, or marbled; under the belly it is white; their ſwallow, or throat, is very narrow, in proportion to their ſize: under their back-bone lies a long bladder, which is dilated or contracted as the Fiſh pleaſes. The uſe of this is not to receive any nouriſhment, for none is found there, but only to lighten the Fiſh, and make him buoyant. The tail, which he makes uſe of as an oar to row himſelf with, and which prudence forbids to approach too near, has this particularity, that it is not perpendicular to the ſurface of the water as he ſwims, like that of other kinds of Fiſh, but horizontal; and this is the great characteriſtick of the ſpecies. They copulate after the manner of land animals, and to that end ſtand upright on their

* I do not know whether one may depend upon Pliny's authority, when he ſays, in his Hiſt. Nat. Lib. ix. c. 3. that in the Indian ſeas are found Whales four Roman acres long. Balænas quaternorum jugerum; that is, 960 feet. Lib. xxxii. cap. 1. he talks of ſome Whales ſix hundred feet long, and three hundred and ſixty feet broad, which had been carried in with a flood to Arabia. I think that this cautious writer in other reſpects has, in this point, been too credulous. In the mean time this is true, according to the general opinion, that the ſize of the Whale grows leſs by degrees. For theſe laſt twenty years one ſeldom ſees any ſo large as they in general were, eſpecially near Greenland, where two or three ſeldom yield a greater quantity of train-oil than formerly was extracted from one. The natural cauſe of this ſeems to be our common induſtry in catching them, ſo that we do not give them time to attain to their full growth.

tails.

tails. The mother brings forth but one or two young ones at a birth; they are nine or ten feet long when firſt produced: they ſuck the dam's teats, which are ſituated near the aperture, on the belly. When the young are tired in their courſe, the dam takes them betwixt her great fins, and ſwims away with them immediately. Under the ſkin the Whale is covered with fat two or three feet thick, out of which the oil is extracted; and under the fat is the fleſh of a reddiſh colour, which is ſometimes eaten, tho' not much admired; but the tongue and the tail are reckoned delicate food. Uſe and ſervice.

When the Whale grows old, weeds, Muſcles, and other foulneſſes, gather upon its back, and always ſticking cloſe to it, cauſes a very ill ſcent, which conſtantly attends an old Whale.

Their food is in general certain ſmall inſects, which float upon the water in great heaps, and are not larger than flies: beſides theſe, they eat various ſorts of ſmall Fiſh, particularly Herrings, which they drive together in great ſhoals, and then ſwallow in prodigious quantities at a time *. The Whale commonly goes under a large ſhoal of Herrings, and at times opens his mouth, and ſucks in all he can. The water, which he takes in with them, as has been before obſerved, he ſpouts out of thoſe apertures in the head; but the Fiſh and inſects remain behind; and ſometimes he ſwallows ſuch vaſt quantities, that his belly will hardly contain them, and is even ready to burſt, which cauſes the Whale to ſet up a hideous roar. Food.

According to ſome accounts, the Whale often loſes his life by the violent diſtention †. On this occaſion, or, when he is purſued by his enemy, the Speckhuggeren, as ſhall be mentioned hereafter, he makes ſo terrible a noiſe that one would imagine it to be a long clap of thunder. The ſame unaccountable noiſe is heard if he accidentally falls into the fiſhermen's herring-nets; and tho' he eaſily carries them away, yet he is very much affected by the fright.

* Doct. Nic. Horrebrow ſays that the Whale ſwallows up whole heaps of Cod alſo, in his account of Iceland lately publiſhed, §. 54, p. 185, where, among other things, he relates an extraordinary accident that happen'd to a Whale that was drove towards the ſhore in time of flood, and could not get back again with the ebb; ſo that the peaſants ſurprized and killed him; and, excluſive of the Whale, got a booty of 600 Cod-fiſh, all alive, in his belly, which he had ſwallowed juſt before.

† That the firſt, and perhaps the laſt circumſtance, was known to the poet Silius Italicus, may be concluded from his words:

——— Rapidi fera bellua Ponti
Per longam ſterili ad partus jactata profundo,
Æſtuat & luſtrans natam ſub gurgite prædam
Abſorbet late permixtum vermibus æquor.

It is ſeldom heard that they do any harm; for tho' numbers of them ſometimes come up cloſe to the fiſhing-boats, yet they ſwim away as ſoon as the people ſtrike the edge of the boat with the oar: this little alarm drives them away, unleſs it be at the time that they pair together, and then it is ſaid they will come up to the boats with more boldneſs; ſo that they muſt row off to avoid danger. I ſhall particularize the manner in which they are caught on the coaſt of Spitzberg and Greenland, and in Davis's Streights, by thoſe ſhips that annually go thither, and part their men into ſeveral boats, in order to kill them with harpoons. This is deſcribed at large by ſeveral authors, but no where more accurately than in Frederick Marten's Travels in Spitzberg and Greenland, cap. viii. p. 110 & ſequ. It is very well known that their fat, and what is called Whale-bone, which the faſhion in this century has brought into great eſteem, are very profitable articles to thoſe who are concerned in the Whale fiſhery. That neither their ſemen nor the brains yield ambergreaſe, as Ol. Magnus imagined, is certain; but the brains of the famous Hval-Rav, or Sperma-Ceti Whale, yield the fineſt ſperma ceti, as is obſerved by Th. Bartholin, in Medic. Domeſt. Danor. p. 297 *. Tho' the Whale is of ſuch a monſtrous ſize, he is often much harraſſed by ſmaller Fiſhes, which he cannot wholly eſcape. The anonymous author of that account, which is annexed to the Daniſh tranſlation of Mr. Peirere's Deſcription of Iceland, treats (p. 108) of a Fiſh that has ſharp horns on his back; and obſerves, that with thoſe weapons it tears open the Whale's belly, by running under him, and then preſſing himſelf up cloſe to him. There are ſeveral Birds which purſue and betray the Whale by the noiſe they make, and will fall upon him, and beat him with their beaks, when he comes to the ſurface of the water. I am told by our apothecaries, that the os ſepiæ in their ſhops, which the peaſants here call hvalskiæl, and find floating upon the water, is the back-bone of a Fiſh which ſhall be deſcribed in the following ſheets, called Spute or Blekſprute, the Tuk-fiſh, or Sepia; which, like the Whale-lice, ſticks cloſe to him, burrowing into his fleſh: when he gets to a rock to ſcratch himſelf, he then kills them; but their ſkeletons ſtill remain faſtened to his skin, and leave the os ſepiæ above-mentioned. The Spekhuggeren, or Vahnen, is alſo a ſmall Fiſh of about four feet long, and which ſhall afterwards be

Perſecuted.

* The ſame is affirmed by Ol. Wormius, in his Muſeum, p. 34, with this addition, that not all Whales, but thoſe ſort that are called Dogling, have ſperma ceti in their ſcull: this opinion is again contradicted by Theodorus Haſſæus. See Bibliotheque Germanique. T. xv. p. 162.

treated

treated of, plagues the Whale with his ſharp teeth, and tears great pieces of fleſh out of him. The Whale not only makes a moſt melancholy and frightful noiſe when thus bitten, in order to free himſelf from theſe troubleſome companions, but will leap a conſiderable height. In theſe leaps he ſometimes raiſes himſelf quite perpendicular above the ſurface of the water, and then plunges himſelf down with ſuch violence into the deep, that if his head ſtrikes againſt any of thoſe hidden rocks that are in the ſhallows, he fractures his skull, and comes inſtantly floating up again dead. By this we ſee that there is no creature in this world ſo great as to be exempt from calamities and misfortunes; and no enemy ſo inconſiderable, that it ſhould be entirely deſpiſed.

Beſides this Whale of enormous ſize I have been deſcribing, we find on this coaſt various ſmaller ſorts, all of the ſame tribe; as the Tuequaal, or Bunch-back'd Whale, which is diſtinguiſhed by a high bunch which it has upon its back, ſomething like a load of hay. The Rorqual, which has lately been ſeen at Sundmær, and is all over of a ſnowy white colour. It is remarkable of the Troldqual, that they love to play with the fiſhing-boats, and get under them. The Spring-hval, or Springeren, is alſo ſeen here; it is about twelve feet long, and is the ſmalleſt of all the kind: it is coal black on the back, and white under the belly; this produces two young ones at a birth, which follow the dam, hanging to the teats under the breaſt*. Mr. Wilhelm. Friman, miniſter of the pariſh of Manger, to whom I am greatly obliged, as well as the public, for many obſervations on the ſubjects of Birds and Fiſhes, relates, that he once ſaw a ſmall Whale of about 22 or 23 feet long, which had a prominent oval ſnout, formed ſomething like the beak of a Gooſe; the like was never ſeen before by him, or any of the people that were ſpectators with him. Whilſt I am writing on this ſubject, I have another account alſo ſent me of the ſame ſort of Fiſh; I ſhall call it Balæna roſtrata, or Nebbe-hval, the Beaked Whale. One of this uncommon ſort, I am told, was taken at Eskevigen, near Fridrichſhald, in the year 1750, by ſome of Col. Kolbiornſen's men: it was 26 feet in length, and a young one of ſix feet long was taken out of its body. The beak makes this Whale differ moſt from others, tho' the whole ſhape is ſomewhat

Leſſer ſorts.

* At Sundmoer the Spring Whales are caught in great quantities by the fiſhermen, who row behind them, and by ſtriking with their oars, and making a noiſe, drive the creature to the ſhore, and there he falls an eaſy prey to them. They yield a good deal of train oil, and the fleſh is not ill taſted.

different,

different, as may be ſeen in the plate annexed, where it is exactly delineated. Mr. Lucas Debes mentions, in his Deſcription of Farroe, p. 162, a particular ſort of Whale, called Doglingen; this is about 30 feet long, and is the eaſieſt caught of all the ſpecies; for it will remain ſtill while a rope is run through its eye-lid: theſe have the characters or diſtinguiſhing marks of the Whale kind more ſtrongly than any other. They are drawn aſhore by theſe ropes. The train oil extracted from theſe Doglingers is ſo fine and ſubtil, that the veſſels it is put into muſt be made of wood of a very cloſe contexture. If the fat be eaten, it immediately tranſpires through the pores, and turns the perſon's linnen yellow*.

Hvidling. The Hvidling, Hvilling, called here Quitling, the Whiting, Aſellus Candidus, ſo called from its white colour, is a middling ſiz'd Fiſh, with a longiſh body, and very ſharp teeth. The fleſh of this Fiſh is very delicate and agreeable to the palate. Whitings are moſtly found where the ground is muddy, and caught with a hook and line. Mr. Anderſon is of opinion, that the Whiting is what the French properly call Morue, and is caught in abundance on the banks of Newfoundland: he relates, in his Deſcription of Iceland, p. 85, that this greedy Fiſh has by nature a certain property, which, perhaps, many gluttons of the human ſpecies would be glad of; namely, that when he accidentally happens to ſwallow a piece of wood, or any thing he cannot digeſt, he can throw out his ſtomach, turn it inſide out, and empty it in the water; and then ſuck it in again to its proper place. This Dionys confirms from his own obſervation, in his Deſcription des cotes de l'Amerique Septentrionale, Vol. ii. p. 181.

Wonderful Privilege.

Hundſtigler. The Hundſtigler, Hundſtage, Aculeatus minor, the common Stittleback, is one of the ſmalleſt of Fiſh; it moves about very quick in the water, and is daily found near the ſtorehouſes, but it is not much regarded. God's providence, which is often ſignally diſplayed in ſmall things, diſcovers itſelf here, by providing this little diminutive creature, which does not exceed two

* In the heads of theſe Doglingers is ſaid to be found alſo the aforeſaid rval-hav, or ſperma-ceti, which is known to be a good healing medicine; from whence I conclude it to have been one of thoſe which the Bremer fiſhermen caught ſome few years ago, and had never ſeen the like before; from which Theod. Haſſæus took occaſion to write his Diſquiſition on the Leviathan of Job, and Whale of Jonah. A French tranſlation of that Treatiſe was printed in the Bibliotheque Germanique, Tom. xv. Art. iv. But perhaps this learned man is miſtaken, as well as many others, in this matter; for the Leviathan ſeems moſt likely to be the Norvegian Sea-Snake, which I ſhall treat of in the chapter of Sea-Monſters; at leaſt this appears moſt probable, and more agreeable to truth, than any thing yet advanced on this ſubject.

inches

inches in length, with two pretty long bones in proportion to its bulk, which are very ſharp, and pointed like ſwords; with theſe, which ſtand erect on each ſide, they defend themſelves from injuries.

The Hyſſe, by the Germans called Schelfiſch, is very like the Whiting; it differs only by ſome ſmall ſcales on the ſkin, which makes the other more evidently of the Cod kind, tho' they both belong to that genus. The Hyſſen has alſo, by way of diſtinction, two black ſpots on the back part of its neck: theſe are caught, like Whitings, on muddy bottoms, in great quantities; tho' they are very ſeldom exported, unleſs it be for want of better ſorts of Fiſh. Hyſſe.

## SECT. IX.

The Jiſgalt, Vulpecula marina, the Sea Fox, is a Fiſh about two feet long, ſomething like a ſmall Shark; it has a white ſhining ſkin, and there is a pointed bone jutting out on his neck; the tail is very long and narrow, and ends in a point. This Fiſh is caught only in deep water, and that but ſeldom, and by accident. It is very fat, particularly the liver, which yields a ſort of oil, that, they ſay, heals all wounds, and preſerves iron from ruſting better than any other oil, which makes it much valued. Jiſgalt.

The Karpe, Carpio, the Carp, is not a Fiſh properly belonging to Norway, and therefore very ſcarce. When they are imported and put in our waters, their breed becomes gradually leſs and leſs. This a learned friend of mine has aſſured me from his own experience. Karpe.

The Karudſe is to be found here, as in other places, in the rivers and ponds; we have both the large yellow, and the ſmall darkiſh kind *. Karudſe.

The Kobbe, or Sælhund, the Sea Calf, Phoca, is to be reckoned amongſt the amphibious animals; for tho' water is its proper element, it always loves to be near the ſhore, or the rocks and cliffs; and farther up the North-ſea they will lay themſelves on the great flakes of ice, eſpecially when they want to ſleep or reſt themſelves. A Kobbe of the common ſort is about five or ſix feet long. The Steen-Kobberne is ſomething leſs, and thoſe they call here Hav-Erken are a kind of large overgrown Kobbe or Sælhund.

* On a rock lying three miles beyond Loms Parſonage in Gulbrandſdalen, there are found in a pond Karudſer of ſuch a prodigious ſize, that the right reverend biſhop Herſleb has aſſured me, that the bones of ſome of them, which he collected on his viſitation-journey, brought to Chriſtiana and ſhewed there, were taken (by thoſe that were unacquainted with them) for bones of large Cod. In Store-Mios are found alſo Karudſer as big as a large plate.

Sælhund as big as a horſe: ſome are alſo called Klapmutzer, becauſe they have a looſe skin on their head, which they can at pleaſure throw down over their eyes and ſnout: their eyes are very ſore and tender, and a ſlight blow on them will ſtun the Fiſh; their head is ſomething like the head of a dog with cropt ears, and the under-lip hanging down; about the noſe there are ſeveral long and prickly hairs, and the body is covered all over with ſhort light grey hairs, and ſpotted with black. Under their fore-part there are two broad paws, and towards the tail there are ſomething like fins, and theſe they make uſe of to crawl about with. They breed, and bring forth their young, on land, in the ſame manner as land animals do, and that twice a year, and produce but one young one at a time. It is ſaid that in bad weather, or in any danger, the mother will ſwallow the young one, and bring it up again. Mr. Derham, in his Phyſico Theologie, Lib. iv. cap. ii. p. 410, affirms this: but I ſhall leave it undecided. The penis of this creature is altogether bony. They are moſt commonly killed with fire-arms about our coaſt, and ſome few with clubs, when the fiſhermen find them aſleep, and can get near enough to them.

Our Bergen ſeamen, who, every year, in the month of March, ſail from hence to Jan Mayen iſland, or to the eaſtern ſide of Greenland, in large ſhips, generally lie there till Midſummer-day, then they go with their ſloops or boats, between the large flakes of ice, upon which the Sea-Calves lie ſleeping by hundreds together, and deſtroy the greateſt part of them. In their republic, they make this cautious regulation, that one of them muſt ſtand centinel, on theſe occaſions, while the reſt ſleep, and with a kind of a noiſe like the hoarſe barking of a dog, he wakes them, when either the white bear, who prowls about upon the ice, or any other enemy, approaches. Theſe people therefore come upon them ſuddenly, and with what they call a Dollſtock, which has a thick iron ring and an iron ſpike at the end, give them a blow on the ſnout, hard enough to make ſure of them, and prevent them from making their eſcape; in this manner they ſerve every one they can come at. The fat which covers the fleſh is flayed off with the skin, and put up in large casks, in order to make train oil. The skins, when they have ſprinkled ſome ſalt upon them, to keep them from rotting, are rolled up ſingly. The catching of theſe is ſometimes as profitable as fiſhing for Whales; for a ſhip may carry off 7 or 800 casks of fat in a ſeaſon, and they will frequently take 2 or 300 in a day. What our fiſhermen affirm, appears very ſtrange, namely,

Regulations for their ſafety.

namely, that theſe creatures, in a flock of a thouſand together, will ſteer their courſe as exactly as if they went by a compaſs: for when they perceive any noiſe, or are driven away from a flake of ice, and are obliged to take ſhelter any where elſe, if the wind ſerves, the ſeamen have nothing elſe to do, but to ſet ſail after them; and when they have only obſerved what courſe they took at their departure, they ſteer exactly the ſame point of the compaſs, and they may be ſure of coming up with them, upon the firſt flake of ice they meet in their courſe; tho' they often ſail a very long way before they come up with them. A great number of Sea Calves are taken at Faroe, in the dark and deep caverns of the rocks, which that iſland abounds with. In what manner that is done, is very well related by the curious Mr. Lucas Debes, in his Deſcription of that Country, p. 151, & ſeq. "They have many ways to catch them beſides ſhooting them. In former times they uſed nets, but few do it now; but they hunt them with dogs, bred for that purpoſe. As the ſight of the Sea Calf is but imperfect, when awake, and he is generally found aſleep on the rocks, the dogs eaſily approach them, againſt the wind (that they may not ſmell them) ſtart upon them unawares, and ſeize them by the throat, holding them faſt till the maſter comes to their aſſiſtance, and kills them. The third way is but ſeldom practiſed, and is called there Paa Later. This word Later is not a Latin, but an old Faroesk word, and ſignifies to pair together; for when the Sea Calves pair themſelves, it is uſually called there Lateres. There are many vaſt caverns under the rocks, cloſe to the ſea, which are like vaulted cellars, the entrance to ſome of which is but ſmall, like a door, that a narrow boat can but juſt get in; within them there is a ſtagnating deep water, that they may row in, but the farther they advance, the ſhallower the water is, till at laſt they find themſelves upon a dry rock, which forms a vaulted roof over their heads, and cauſes an extraordinary echo when one ſpeaks. All here is ſo dark, that there is no diſtinguiſhing day from night. In theſe diſmal caverns the Sea Calves take up their abode by hundreds together, and therefore the inhabitants think they couple there; and thence call thoſe places Later; and to look out for thoſe places, to kill the Sea Calves, they thence call Paa Later. This Later is of two ſorts; the one is when the entrance is under water, and is therefore inacceſſible, and is called Kauſue Later, becauſe the Sea Calf kauſuer, that is, ducks under water, when he enters it: the other has the entrance above water.

How they catch them at Faroe.

" water. To get into theſe caves the peaſants have a particular " ſort of narrow boats. As they know the time when the young " ones are fat and full grown, they then ſet out, and always have " two boats in company: one goes into the cavern, while the " other is left at the outſide of the entrance. They have a rope " of 80 fathoms or more faſtened to theſe boats at each end, that " if the boat which is gone in ſhould be filled with water, which " often happens, the other, upon a ſignal given, may draw it " out, and ſave the men. As the entrance is narrow, they have " boat-hooks to each boat, which they make uſe of to puſh " themſelves in and out. They carry a light, which is a torch " as thick as a man's arm, along with them, that they may ſee " how to ſtrike the Sea Calves: this light they hide in the " boat, that the Sea Calves may not ſee the men till they get " upon the dry rock. When they have got in ſo far that they " feel the ground with their boat-hook, then one of the men " jumps out of the boat into the water up to the neck, and he " carries a club to ſtrike the animal with, which is called Kobbe-" Gaſſe. Another man follows the former with a light in each " hand, which he is obliged to hold higher than his head, to " keep it above the water: then a third man follows with a Koll, " or Kobbe-Gaſſe alſo, in his hand, to ſtrike them with. When " the young ones, which lie on the ground, ſee the light and " the men, they ſtrive to get into the water; as for the old " ones, they get upon their paws, and ſtand upon their defence " with open mouths, eſpecially the male, who will often make " the man give way; for when he ſtrikes at him he will lay " hold of the ſtick with his teeth, and wrench it from him, " and throw it aſide out of the man's reach. In this caſe the " third man comes forward with his club, and ſtrikes him on the " back part of his neck, and ſo knocks him down. The females " are not ſo bold, but always ſtrive to get away if they can. " If they happen to hit the creatures right upon the head, they " are ſtunn'd with the blow, and then they immediately cut " their throats. When they have deſtroyed all the old ones, " then they fall upon the young, which uſually lie quiet a good " way from the water, and neither mind the men nor the lights. " They lie quite ſtill, and ſuffer themſelves to be killed without " reſiſtance. When the execution is over, they drag the dead " carcaſſes to the water, and faſten them to the rope, by which " the boat without the entrance hawls them out; then they " row out with their boat; but if the water be ſhallow, the " outer boat drags out the other, with the men, &c. By this

" method

"method they ſometimes take a great many, to the number of "fifty or ſixty, in one cave. The old ones are often as big as "an ox, and ſo very fat, that there is ſometimes three Vaager * "taken out of one. The hide they uſe for ſhoes; the fleſh they "eat, and the fat is melted for train-oil; and part of them they "pickle and eat." So far L. Debes.

The Kollie, is a ſmall Fiſh, of a reddiſh colour, ſix inches long, with large eyes, fine ſcales, and very delicate fleſh. The roe is reckoned particularly well taſted: they angle for it in freſh water. Kollie.

The Kolmund, or, more properly, Kulmund, or Kulle Mule, which name is given them becauſe their mouth and throat are coal-black, is otherwiſe called Guld Lax, or Golden Salmon, becauſe it is ſhaped like a Salmon, though the head is rather rounder, and the Fiſh is more tapering towards the tail: the flesh is white, and taſtes like that of a Pearch: they angle for them as for the Salmon, but with us they do not catch any great number. Kolmund.

The Knurhanelitem, or Reinald, the Gurnard; the former name it has from its being heard to grumble for half an hour after it is drawn out of the water. Its fleſh taſtes ſomewhat like Mackrel, and I think, tho' I am not certain, that it is the ſame Fiſh which they call Aaskiar-Niot, at Sundmoer; of which I have treated before. If it be the ſame, it has three names in one language. Thoſe correſpondents that gave me an account of this Fiſh, under the name of Knurhane, deſcribe it to be twelve inches long, with a head almoſt like a Pearch, a round body, and the skin rough and prickly; they ſay it may be uſed to poliſh wood, or even metals: of this particular my Sundmoerske correſpondents take no notice. They are caught with a hook and line. Knurhane.

The Krokle, is a ſmall freſh-water Fiſh, and but little known. It is hardly four inches long, but is very abundant in ſome places, particularly in the Lake Tyrefiord, on Ringerige: they are ſeen there in heaps, and are driven aſhore by the Fiſh of prey, and eaſily caught in ſmall nets: they are well-taſted. Krokle.

The Kullebars, is a ſmall, delicate, freſh-water Fiſh, well-known in Denmark. Kullebars.

* A Vaag in this country is 36 pounds avoirdupoize weight.

# CHAPTER VI.

## A Continuation of the Former, concerning FISH and FISHERIES.

SECT. I. *Of Ling, Salmon, the Piper, and others.* SECT. II. *Of Mackrel, the Porpeſſe, and others. Of the Naruhal, Lamprey, Salmon-trout, and others.* SECT. III. *The Horſe-Mackrel, and others.* SECT. IV. *Of the Razor-fiſh, the Oſtracion, and the Thornback.* Sect. V. *Of the Sea-Alhuler, the Herring, the Alburnus, the Gattorngive.* SECT. VI. *Of the Wolf-fiſh, the Frog-fiſh, or Sea-devil, the Sturgeon, and Sword-fiſh.* SECT. VII. *Of the Cod, and others.* SECT. VIII. *Of the Walruſs, or Seahorſe, the Sea-Scorpion, and others.*

### SECT. I.

Lake. THE Lake, or Lake-fild, the Marena, or Freſh-water Herring, a freſh-water Fiſh, of which great numbers are caught in the lake Store-mios, on Hedemarken. The peaſants thereabout dry and export them. They are ſhaped almoſt like a Herring, but are not quite ſo large, nor ſo fat, and well taſted; and, indeed, are not much regarded by thoſe who have variety of other Fiſh. I make no doubt but this Fiſh is the ſame with that which Schonveld calls Marene. This author ſays they are found in great quantities in the Holſtein lake, near Ploen, and in the Mecklenburg dominions, near Sverin: "Harengo omnibus fere partibus reſpon-" det, pinnis, branchiarum inciſione ampliore, dorſi ſubnigro, la-" terum argenteo colore & ſquamis facile deciduis. Sed minor " eſt aliquando, duorum ut plurimum palmorum longitudinis, ple-" niore item carne duriore & friabiliore, ventre molli non ſerrato, " niſi quod in ſcallenſi lacu marenas cubitales capi certum eſt." Willoughby, Lib. iv. cap. 10, p. 229.

Lange. The Lange, Ling, or the Long Cod-fiſh, a Sea-fiſh, ſo called from his length, which may be ſix feet at leaſt. It would be like an Eel, if it was not ſo thick towards the head, which makes it look more like a long and narrow Cod. It has a ſort of a long fin, running all along the middle of the back. The ſkin is ſmooth, and of a ſhining light colour; the fleſh is well taſted, and

and reckoned the moſt delicate of the whole kind. It is ſent to many parts of Europe, ſalted, and dry'd. It is brought to Bergen, where there is a great demand for it by foreign merchants *.

The Dutch uſe a great deal of it for ſhips proviſion on long voyages, becauſe it will keep longer than any other Fiſh in hot countries, when it has been well cur'd, and it then taſtes better than when it is freſh. The Ling uſually comes towards the Shore along with the Spring Herrings, or ſoon after them, in great ſhoals: they are catch'd with a ſtrong hook and line. The chief place for catching them with us is on the Storeggen, or the long Sand-bank, mentioned above, that ſtretches itſelf along the coaſt. To this place the fiſhermen go in the midſt of Summer, to fiſh for Ling and Turbot, twelve or ſixteen miles from the main land.

The Lax, Salmon, Salme, a well-known, conſiderably large, and excellent Fiſh, has bright ſilver ſcales, but the fleſh is red. It is allowed by all to be one of the moſt delicious and beſt-taſted Fiſh; however, the phyſicians do not reckon it wholſom, when it is eaten freſh, in too great a quantity. Lax.

As the Salmon is not fond of biting at a bait, and there is ſeldom any Fiſh found in its belly, ſome are inclined to think that (as it is ſaid of the Herrings) it lives upon water alone, and that this renders its fleſh ſo delicate: but this opinion is refuted by Willoughby, Lib. iv. §. 11, p. 192. He ſays, "Mr. Johnſon aſſures me that the Salmon is fond of fine red worms, when they are thrown into the water; but I ſhall not determine this point†. I ſhall only obſerve, that as the Lord of nature, who has created nothing in vain, has given the Salmon good teeth, we may conclude the former opinion is without foundation; for it were abſurd to ſay they were given them only for weapons, to defend themſelves againſt Fiſh of prey. I am to obſerve alſo, that one of my correſpondents affirms, that he has found ſmall Herrings in a Salmon's belly: nay, tho' the Salmon is but ſeldom diſpoſed to bite at the hook, yet he will ſometimes do it." Nouriſhment.

Willoughby, whom I quoted above, alſo confutes Geſner's opinion, concerning the Salmon's breeding in the ſea: he thinks that is done in freſh water, from whence they afterwards go to the ſea: but in this he is certainly miſtaken. The Salmon unqueſtionably breeds in the ſea, tho' it is not entirely to be deny'd but Breeding-place.

* The quantity of this Fiſh that is taken is very inconſiderable in proportion to ſome others; but yet there was exported, in the year 1752, 45,000 liſp-pound weight, or 720,000 averdupoiſe.

† Mr. Ewen Meldal, chaplain at Haram in this dioceſe, has, amongſt other obſervations, lately aſſured me, that he has found ſmall worms in the Salmon's belly.

that

that they may ſometimes breed in rivers alſo, for they are found in the midſt of Germany, and upper parts of the Rhine, about Baſel; but we are very well aſſured that the Salmon chiefly ejects its roe at the mouths of rivers, where they empty themſelves into the ſea, or a little way beyond, in the ſalt water, in this manner:

Breed. they bend themſelves crooked, in order to eject the roe at an aperture under the belly, and, in the mean time, they ſtick their heads down in the ſand, that they may have the more ſtrength. The male comes preſently after, to keep off other Fiſh from devouring the roe, and he there bends his head towards the tail, and ejects his ſperm upon the roe. The Cod, Herring, and other Fiſh that have roes, probably breed in the ſame manner; but as that is done in deeper water, it is not ſo eaſily obſerved as in the Salmon.

The milt, which is alſo called the milt of other Fiſhes, is encloſed in a collection of many ſmall and fine veſicules, out of which that whitiſh fluid is ſqueezed; but the male Salmon's milt is in one maſs, and looks like liver. They ſay the Salmon is ſix years in growing to its full ſize, and that he is then five feet long, and weighs from twenty-five to fifty pounds. In the rivers of Mandals and Tannefiord are found the fatteſt and beſt about the whole Norway coaſt, but they are found alſo in the Spring almoſt every where. They are in great plenty from the middle of April to the middle of July, at which time they come in ſhoals, and ſeek the rivers, partly to refreſh themſelves in freſh water, and partly to rub, or waſh off, in the ſtrong currents, and deep water-falls, a kind of greeniſh vermin, called Salmon-lice, that get in between their fins, and plague them in the Spring ſeaſon.

God's providence. Theſe inſects are wiſely deſigned by the Great Creator, to drive this rich and valuable Fiſh, as it were, into the hands of mankind, who uſe ſeveral arts to catch them. We have, within theſe

The method of catching it. few years, in theſe parts, begun to catch them with a kind of large net, ſet with many bends and angles; but this method often miſcarries, though ſometimes it ſucceeds, and they will take two or three hundred at a time. The old and common way is, to catch them in a net, ſpread at the mouth of a river, which falls with a ſtrong current into the ſea, and is therefore haunted by the Salmon for the purpoſes above-mentioned. They come thither on ſeeing the rapidity of the water, and the white foam; but as theſe opportunities are not every where to be met with, they allure the Fiſh by art, and decoy him into their hands, by making a part of the rock white. They ſay the Salmon has a great averſion

ſion to any thing red; ſo that the fiſhermen that watch this Fiſh muſt never wear jackets nor caps of that colour: a certain perſon here in Sundfiord for that reaſon took all the red tiles off from the top of his houſe, which is juſt by the water ſide, and covered it with blue ones. They avoid all kind of carrion, and if by accident, or by the malice of ill neighbours, there be any ſuch thing thrown into the places where they fiſh for them, they throw a lighted torch into the place: but they ſuperſtitiouſly affirm, that it muſt be lighted by the rubbing of two pieces of wood together till they take fire; but this is a vulgar charm. There conſtantly ſtand two men by the Salmon nets in the Spring to watch them; the one in a boat, or, which is better, on a high poſt, to obſerve when the ſhoals of Salmon come to the net; on which he calls out to the other, who remains on the ſhore, holding a rope that is faſtened to the net. On the ſignal given, he draws the net cloſe with the rope, ſo that the Salmon cannot get out again. Sometimes by this means they will take twenty or thirty at a time; and even ſometimes ſuch a prodigious number, that they muſt let ſome ſcores out to prevent their net from breaking.

The Salmon is a very ſtrong Fiſh: fiſhermen have aſſured me, that one of them has been able to pull a man down when he has ſtuck him with his Salmon ſpear, which is a long pole, with three iron teeth at the end, like a trident. This Salmon-ſpear is uſed in another method of fiſhing; namely, where they have built what they call the Lax-Kar, a-croſs a river. This is compoſed of a number of ſtakes driven into the bottom of the river, pretty cloſe together, between which they ſwim in ſhoals, and out of eagerneſs to get higher up the ſtream, they frequently ſtick faſt there, till the fiſhermen come and ſtick them with the ſpear. I have ſeen them catch twelve in leſs than half an hour in this manner. The eagerneſs of theſe Fiſh to get a great way up the rivers, may be known, firſt by the following circumſtance; for where the water is low, and the ſand-banks lie but juſt under its ſurface, ſo that they cannot make their way along on their belly, they will throw themſelves flat on one ſide, and in that poſture work themſelves through till they reach deeper water. We ſee it alſo by their high and violent leaps againſt the ſtream, where there are falls of water from the rocks; for if they meet with a caſcade of four or five feet high, they are not deterred from purſuing their courſe, but will raiſe themſelves upright, and leap with ſuch violence, that they ſurmount this obſtacle. Hence poſſibly its Latin name Salmo is derived from Salio, to

leap. There is a ſtrange and hazardous way of catching Salmon practiſed in the dioceſe of Chriſtianſand, near that famous bridge a-croſs the river Mandal, called Biellands-Broe, which is built upon piles, reſting on two high and ſteep rocks, and is reckoned one of the moſt curious pieces of architecture in this country: it is 36 feet above the common ſurface of the water, tho' ſometimes it riſes ſo high as to touch the bridge, when the ſnow melts ſuddenly from the rocks. A little way to the north of this bridge, near a farm-houſe called Foſs, this river falls from the top of a high rock, which projects out, with rugged ſtones on each ſide, and deep caves at the bottom: the violence of the fall makes the water foam and play up like a fountain. Into theſe deep caverns, juſt by the caſcade, do theſe people venture themſelves, on a float made of pieces of timber, tied together with twigs. If the float breaks their lives are at ſtake; for they muſt fall into the ſtream, which carries them away with an amazing violence. This happens ſometimes, and they have been taken up half dead, at a conſiderable diſtance from the place. Upon theſe rafts they enter the hollow places of the rock, in which the Salmon loves to take ſhelter. When they are driven out by the fiſhermen, they crowd in great numbers to the entrance of the cave, and are taken there. The Salmon is fatteſt in Spring, but is lighter and looks paler if caught after Midſummer. Many of the peaſants that live in the provinces bordering on the ſea, make a conſiderable advantage of the Salmon-fiſhery, and even clear more than their taxes by it. There is annually exported a vaſt quantity of them, ſome dried in the ſmoak, and ſome pickled, in barrels, to Bremen, Holland, Flanders and France. It has been known, that in one day more than 2000 freſh Salmons have been brought into Bergen.

Dangerous fiſhing.

Lodde. The Lodde, or Stinking-Fiſh, is a Sea-Fiſh, in ſhape ſomewhat like a Herring, but not eatable, tho' 'tis extremely fat. When they are ſometimes thrown up on ſhore in ſtormy weather, by the violence of the currents, the goats will eat them; but their fleſh will be infected with ſuch a diſagreeable ſmell and taſte, that they cannot be afterwards eaten. The verſes that Mr. Peter Daſs quotes, p. 47, in his Deſcription of Nordland, in which place alone they ſeem to be known, repreſent the Lodde as a very miſchievous Fiſh, which entices others of more value away with him from the ſhore, and may be looked upon as a nuſance to the country.

" Bort

"Bort Lodde med al din forgifti ge ſtank
Al Verden foronſker dig alſkens ſkavank
Du eſt os et riis og en ſvobe:
Ret ſaaſom en hore, der tragter at flye,
Saa rommer ungdommen med hende af bye.
Som bukke med gederne lobe, &c."

The ſenſe of which lines is this:

Away Lodde with thy poiſonous ſtench,
All the world wiſhes thee pain and torment;
Thou art to us a rod and a ſcourge,
Thou art as a whore pretending to fly,
In order to draw the unwary youth away with her out of town.
They run after her, like the wanton he-goats after the females, &c.

The Lyr or Lyſſe, the Piper, a middle-ſized Sea-fiſh, ſomething like the Trout kind in ſhape, tho' ſmaller. The ſcales alſo are leſs, and the fleſh is excellent. Some look upon this Fiſh to be nearly allied to the Salmon; and the roe is reckoned a very great delicacy. They are caught with a net, but not in any great quantity. Aldrovand, Lib. ii. c. vii. ſpeaks of a Fiſh in the Mediterranean by the name of Lyra, whoſe head is ſhaped like a harp, but whether that belongs to this claſs I do not know. Lyr.

## SECT. II.

The Mackarel, Scomber, a well known Fiſh, of about a foot long, with beautiful blue and green ſtripes on its ſmooth ſhining ſkin: the fleſh is like the Herring's, but without that ſtrong flavour; and has not ſo many ſmall bones. It is very white, and agreeable to thoſe who can digeſt their fat; but is not reckoned very wholeſome by the phyſicians. When they firſt appear with us in the Spring they are very lean, but they grow fatter towards the Summer. The Mackarel is an unſteady and uncertain Fiſh; for they go in great ſhoals from one place to another, and drive the Herrings before them, which are terrified at their appearance. They are eaſily caught with hooks and lines, and in nets in great numbers. They are pickled, and exported; but what is got by them hardly makes amends for the loſs of the Herrings which are driven away by them. They are exceſſive greedy and voracious, like the Shark kind; and, like them, Mackarel.

them, are very fond of human fleſh. It is ſaid, that if a naked man ſwimming in the ſea happens to fall in with a ſhoal of Mackarel, they will devour him in an inſtant. It happened very lately, that a ſailor, who belonged to a ſhip in Laurkulen harbour, who went into the water to waſh himſelf, was all on a ſudden miſſed, to the ſurprize of his ſhip-mates: in two minutes time he roſe to the ſurface of the water all over bloody, and vaſt numbers of Mackarel faſtened upon him, which they could hardly force to quit their hold; and when they did it was too late, for the poor creature, without doubt, expired in great agonies. Willoughby obſerves, Lib iv. §. vi. p. 101, that this Fiſh has no air-bladder under the back; this is ſo much the more remarkable, becauſe, as has been ſaid already, they ſwim extreamly quick. His words are, "Ex ſcombris olim Garum conficiebatur laudatiſſimum." Plin. Lib. xxxi. c. 8. "Garum ex ſcombris & coliis apud Byzantinos fieri ſolere nunc dierum intelligo, referente Bellonio." This Garum is what the Italians call Caviar, otherwiſe made of Sturgeon's roe. Theſe Fiſh are found in the waters near Aſſow, and the Caviar is at a great expence tranſported from Ruſſia to Italy. It is aſſerted, however, that the roe of Mackarel is uſed for Caviar in the Mediterranean, according to the teſtimony above cited. If this be true, why might it not be uſed here for the ſame purpoſe, rather than thrown away, as it conſtantly is in many places, where they catch them in abundance, and pickle them as we do Herrings. The method of making Caviar may be compriſed in a few words: they waſh off all the blood and ſlime from the roe with vinegar, and take away the ſinews and ſkins that are about it; then they ſpread it for a little time to dry: after this they ſalt it, and hang it up in a net, that the moiſture may drop from it. When all this is done, they lay it in a ſieve or cullendar, till it is thoroughly dry, and fit for uſe. The Italians pay a very great price for this delicacy.

Melancholy accident.

Marſvin.

The Marſvin, or Porpeſſe, which is called here Niſe, and alſo Tumler, the Tumbler, becauſe it is always ſeen rolling up and down, is a fat Fiſh, about ſeven feet long, ſhaped like a ſmall Whale, excepting the tail, which is broad, and does not ſtand horizontally like that of the Whale. Its mouth is like the ſnout of a hog, but ſhort, and its eyes ſmall: it has a great many teeth, and thoſe very ſharp. The tongue is thick and round, and ſo long that it hangs out of its mouth. Its ſkin is very thin, ſmooth, and of a black colour; and feels as hard as bone. Under this ſkin lies the fat about two inches thick, out of which they melt train oil. The fleſh is not regarded, unleſs it be by the poorer

poorer ſort of people, who pickle it. The Scots eat it, and look upon it as a very good diſh; and in North America it is ſaid the French make ſauſages of it. They breed like the Shark and Whale, being of the viviparous kind. It is affirmed that they breed every month, and one of my correſpondents is of this opinion; but I dare not aſſert this for a certainty, unleſs I could meet with farther confirmation. They are ſometimes ſhot; and are alſo caught, when they run into narrow creeks, with the Summer Herrings: for this purpoſe the fiſhermen have a very ſtrong net; this they ſpread over the mouth of the creek where the water runs out, which is ſo open, that they work their head through, and then, like the ſmaller Fiſh, they ſtick faſt by the gills.

It is ſaid the Porpeſſe are fond of the human ſpecies, and ſeek their company: but perhaps what gave riſe to this opinion is their being fond of following boats and ſhips in the Mediterranean, where they are called Dolphins, and are ſeen (as well as on the coaſt of Norway) in great numbers. There they alſo imagine that this animal is fond of muſic, and may be enſnared by means of it. It is certain that it is not one of the mute Fiſhes, for ſometimes they make a noiſe like the cries of a human creature. The Italians alſo call this Fiſh Marſvine Cacciatore de Mare, becauſe they are very voracious, purſuing all kinds of ſmall Fiſh. Gaſpar Schottus, who in his Phyſica Curioſa, Lib. x. cap. 12. p. 1085. calls this the King of Fiſhes, and relates from Ælian and other ancient writers, ſome remarkable ſtories concerning it; and theſe, if we ſuppoſe them true, confirm their affection for the human-kind, as obſerved before *.

Marulke. See Ulke. Marulke.

Mort. See Sey: for it is of that kind, tho' it has a different name, becauſe of its ſize, which is ſmaller. Mort.

## SECT. III.

The Narhval, Unicornu Marinum, the Unicorn Fiſh, is, like the former, of the Whale kind; but, as far as I have been able to learn, this ſpecies is ſeldom found on the coaſt of Norway: farther up the North ſea, particularly along the Greenland coaſt, it is not uncommon. The anonymous author of a letter concerning the Whale-fiſhery, prefix'd to the Daniſh tranſlation of Peirere's Account of Iceland, deſcribes this Fiſh in theſe words: "The Narwhel's body is of the bigneſs of a large horſe †; it has four Narhval.

* Beſide the Porpeſſe, there is another of the Whale kind, called Dolphin; and alſo a ſmall Fiſh of a very different kind.

† It muſt have been a young one; for according to the various accounts that are to be read in Willoughby's Hiſt. Piſc. Append. p. 12. others have ſeen them 43 or 44 feet long.

fins, and a whitiſh skin, with black ſpots: this is thick, and fit to cover trunks and portmanteaus. What diſtinguiſhes the Norwhal from other ſpecies, is a long and pointed horn, of ten feet or more in length, projecting from his head, with which he wounds other Fiſh." He adds, that he has ſeen them, though they are ſcarce, and difficult to be taken. I had two of theſe horns in my cabinet, but made preſents of them to my friends, who are admirers of natural curioſities. Theſe were very much valued when they were thought to be the horn of an imaginary land-animal, called the Unicorn; but that miſtake has ſince been cleared up, by the diſcovery of this Fiſh, and the former is only conſidered as a chimera; tho', on the contrary, one might preſume that there is ſuch a creature, from the analogy between land and ſea animals. "Nuperis annis ex Groenlandia navibus ſuis onuſtis, ampliſſimus Vir Henricus Muller, Quæſtor Regius & Conſiliarius, accepit copiam dentium balenæ quam Narhval vocant, ſeu unicornua borealia, multa & grandia, quorum aliqua trium ulnarum longitudinem æquabant," ſays Th. Bartholin. in Actis Med. Anno 1673, Obſ. 31. He has alſo written a particular account of it; and, cap. xv. diſcovers the fraud which the traders formerly practiſed, by pretending that this Whale's horn was the horn of a land-animal.

The many large horns which were brought from Greenland at that time, he ſays, were uſed as materials towards compleating the magnificent throne, which is now to be ſeen in the caſtle of Roſenberg at Copenhagen. This author, as well as Ol. Wormius, Schonveldius, and Jacobæus, aſcribes a medicinal virtue to this horn, tho' not ſo great as imagined by ſome others; for at one time it was eſteemed to be almoſt as valuable as Gold. See the latter part of p. 14 of that author's Mus Regium *.

Nebbe-fild. The Nebbe-fild, the Needle-fiſh, is alſo called Siil, and Acus Mariæ, Mary's Needle, probably from its long and narrow ſhape; for I have ſeen ſome eighteen inches long, and their bodies not thicker than a large quill. Their tail, which is almoſt half their length, is as ſmall as a ſtraw, and at the end it tapers away to a mere thread. The head, like the reſt of the body, is not round, but angular, and the mouth is like the beak of a fowl, though at the extremity it is raiſed a little, ſo as to make a flat blunt ſnout. They breed and are commonly found in the wet ſand, on the edges of the ſhore, and not abſolutely in the water. They are generally dug up with a ſpade, and made uſe of as a bait to catch other Fiſh, but otherwiſe are not regarded in theſe parts. In

* This, tho' called a horn, is truly a tooth of this Fiſh, of a ſingular ſtructure.

the

the Mediterranean, according to Geſner's account, p. 9, they pickle and eat them, accounting them very delicate for the table; and in Nordland they eat them broil'd.

The Negen Ogen, the Lamprey, otherwiſe called the Steen-ſue, or Stone-ſucker, is taken, according to Undalini's account, in Store Mios, and other freſh waters, particularly in the rivers of Mandal and Undal, where they are found as thick as a man's wriſt, though but two feet long, but it is not look'd upon here (as in foreign countries) as a well-taſted, or even as an eatable Fiſh. Negen Ogen.

"Muræna ob venenoſam qualitatem non immerito ſuſpecta, quin & mandentibus (ut recte Aldrovandus) ſuis ariſtis plurimum faſtidii parit;" ſays Willoughby, p. 104. They are often ſeen to jump againſt the ſtream like a Salmon, in order to get up the rivers, and with their ſharp teeth they will lay hold of the rock: hence this Fiſh has its Norvegian name, viz. Steen-ſue.

The Orte, or Oret, the Salmon-trout, Trutta Taurina, is caught both in freſh and ſalt water, like the Salmon, and is of the ſame genus: it is much like the ſmall Salmon, which we call here Tart, excepting that the head is thicker and ſhorter, and the body, near the tail, is broader, and of a dark colour; but it is neither ſo fat, or well-taſted. It is caught in nets, and generally where the rivers empty themſelves into the ſea *. Orte.

It is a very common Fiſh in the freſh lakes and rivers, but many of them are ſubject to a ſort of diſeaſe, ſo that they cannot be eaten. In that caſe their head grows very large, and the body is emaciated; and in their intrails there are found pimples, reſembling millet-ſeeds. This diſtemper is aſcribed here to the ſaw-duſt that falls into the rivers, on which there are mills for ſawing timber. Others are of opinion that the roe, which is very large in proportion to their ſize, is corrupted, for want of being ejected in proper time, and occaſions this diſtemper: but I cannot comprehend what ſhould prevent them from doing it, unleſs it be the want of a convenient place, according to their

* It is ſurprizing, that on the top of the rock Varne-ſet, and many other high places in Haranger, they catch this Fiſh in ſmall ſtagnant waters, or ponds, which, by their high ſituation, do not ſeem to have any communication with any other ponds or rivers. Can it be ſuppoſed that thoſe Fiſh have been there ſince the flood, or that birds of prey have carried this ſpawn, or young fry, up there? Or is it poſſible that the fog, mentioned in chap. i. carried them up, and dropped them in thoſe ponds; as the heavy clouds are ſaid to take up Herrings out of the ſea, and to drop them on the rocks in Faroe? If not, then one muſt imagine that thoſe waters, in ſuch a high ſtation, by means of ſubterranean paſſages, have communication with other waters, as it is to be concluded that the freſh water lake, Lille-mios, in Valders, has a communication with the ocean, becauſe they find Cod in it. Herman Rugge, miniſter of Slire, obſerves, the higher thoſe ponds are in the rocks, the larger and fatter are the Fiſh they contain.

natural

natural method of dropping it: this ſeems, indeed, confirmed to be the cauſe by the obſervations of ſeveral perſons; for they are frequently ſeen to dig, with the motion of their tail, ſeveral holes in ſand or clay under a rock, where they eject their roe in common, and then roll a ſtone upon it to preſerve it.

The ſame is ſaid of ſome others of this genus, particularly of the River-Trout. "Truttæ fluviatiles circa feſta natalitia turmatim congregantur. Scrobes caudis excavant, ſeque octodecim circiter in unum collocantes, inibi fœtificant, ſupra fœturam lapides advolvunt." Aloyſ. Com. Marſili Danub. Panon. Tom. iv. p. 78. Amongſt Salmon-Trout are a certain ſort of Fiſh called here Roer; they have this name, becauſe they differ from the others in the colour of their fins, which are of a more lively red. They are reckoned wholeſomer than the Salmon-Trout, and, it is ſaid, are not ſubject to the diſtemper above mentioned.

Piir. The Piir, the Trachurus, or Horſe-Mackarel, is, in appearance, a ſmall Mackarel, and it muſt either be the young, or a particular ſort of the ſame tribe; but which I cannot determine. It is much leſs and leaner than the common Mackarel; and, without doubt, it is the Fiſh which Willoughby, after Aldrovandus and Bellonius, has called the Trachurus. His account of it is this: "Scombros colore, figura & ſapore refert, ut recte Bellonius, unde & Maquereau baſtard, i. e. Scombrus ſpurius Gallis dicitur. Verum minor eſt quam ſcomber, corpore minus ſpiſſo rotundoque & paululum compreſſo." Lib. iv. cap. 12. p. 290.

puur. The Puur, the Dove, a ſmall freſh-water Fiſh: I have never ſeen it in the rivers near Bergen; but it is found in thoſe of Nordland. It looks almoſt like a Herring, and is very well taſted.

Quabbe. Quabbe. See Aale-Quabbe.

Queite. Queite. See Helle-flynder.

## SECT. IV.

Raate. The Raate, or, as it may be called, the Sea-Karudſe, as alſo the Berggylten, the Sea-Carp; for betwixt the Karudſen, particularly the flat and light brown kind, and the Raate, in ſize, ſhape, ſcales, and every thing, there appears outwardly very little difference, but in the taſte there is a great deal; for the fleſh of this is a great deal coarſer, tho' it does not want for fat. Indeed if one takes particular notice they may be diſtinguiſhed; for, as the Hyſſen differs from the Whiting, by two black ſpots on the back part of the neck, ſo has this Fiſh a black ſpot on each ſide of the tail.

The

The Rage-Kniv, Novacula, the Razor-fiſh. This is a new name, hitherto not known; but, according to the privilege that all natural hiſtorians take to give names to things that till then had none, I will venture to give a name to a kind of Fiſh but ſeldom found here, which, according to the figure, appears to be ſomething like the blade of a razor, and hardly a ſpan long: it has a thin and flat body; the back, from the head down to the tail, which is very ſmall, is full of ſharp fins or prickles. There are others under the belly alſo, but much fewer; and two ſmall ones under the head, which in this Fiſh ſeems pretty broad, tho' but ſmall in proportion to the mouth and eyes, which are large. I have never ſeen any of them freſh, and my correſpondents in the fiſhing parts of Norway entirely omit them; I cannot, therefore, give any certain account of their colour, or whether they have ſcales, for I do not perceive any on the dry'd ſample that I have before me: however, the ſcales may be dried in ſo as not to be diſtinguiſhed from the skin. If this Fiſh has ſcales, then, in my opinion, it is the ſame as Rondelet, p. 741, calls, after Pliny's authority, Novacula, or the Razor-fiſh. As theſe agree in almoſt every particular, I have taken the liberty to name our Norvegian Fiſh after thoſe that are known in the Mediterranean. They are found there in great numbers, and are reckon'd both wholeſome and well taſted. Rage-Kniv.

The Rod-Fisk, called alſo Cluer, is a middle-ſized Fiſh, and a native of the ocean: in appearance 'tis much like a Carp, but it has large ſcales, and thoſe of a very deep red colour: the eye is remarkably large, and near the fins, both on the back and the belly, there are ſome large and ſharp pointed bones. The fleſh of this is hard and pretty fat. It is caught with a hook and line in deep water at all ſeaſons of the year. Rod-Fiſh.

The Rogn-Kal * and Rogn-Kexe are the male and female of the ſame kind; the Square-fiſh, or Oſtracion. This is a remarkable ſalt-water Fiſh: 'tis ſeldom much above a foot long, but very broad, thick and clumſy. What is properly the body of this Fiſh is ſmall; all the reſt conſiſts of a thick ſhell of a cartilaginous or griſtly nature, which makes it appear ſhrivelled and rough. This ſhell, or cartilage, is covered with a reddiſh skin. There are ſeveral round bony knobs, diſpoſed longitudinally in three rows, on the outſide of it. The head is, like the body, thick and clumſy; the mouth has a ſort of a ring Rogn-Kal.

* Bellonius, Aldrovandus, Wormius, Cluſius, and others, call this Fiſh Oſtracion, but don't ſeem to have any right knowledge of it.

on each ſide, and looks like a creſcent. The tail is quite even at the end, and reſembles a birch broom cut tranſverſly: along the back runs a ſmall undulated ridge, and under the belly is a piece of ſoft ſpungy excreſcence, with which it ſticks faſt to the rocks like a ſnail; and it requires ſome ſtrength to get it looſe. The female, or Rogn-Rexe, is ſomething larger than the Rogn-Kalen, or male, and of a blue colour. They eject their ſpawn in large quantities about Whitſuntide: hence the Fiſh has its Norvegian name. The fatter it is the more it approaches to a red colour, being otherwiſe greeniſh. The body, as I obſerved before, is but ſmall, and, as I am informed, very delicate food, for I have never taſted it. The Otter is very fond of this Fiſh, and it often falls a prey to him. As the Rogn-Kallen never bites at any bait, and loves deep water, it is ſeldom caught but by accident in the Cod or Salmon nets. When they are ſeen ſwimming near the ſurface of the water the fiſhermen often give them a blow on the neck with their oar, and ſo take them; but they are only uſed as a bait for other Fiſh, particularly the Turbot, who is very eager after them.

Rokke. Rokke, Rokke-fiſk, the Thornback, Raia Clavata, in Norway called Skate. 'Tis a Sea-fiſh of an extraordinary ſhape, and not unknown in Denmark, tho' it ſeems to differ a little from ours *; for there are various ſorts, all which, or moſt of them, are deſcribed by Willoughby, Lib. iii. c. vii. p. 68, & ſequ. The Norvegian Skate in body is, like a large Flounder, quite flat, with a ſharp head: it is white under the belly, and of a darkiſh brown on the back; and has prickles and ſmall circles on the ſkin. There are ſeveral broad fins projecting out on each ſide of this Fiſh, like wings, larger than its whole body. But what is moſt remarkable, is a roundiſh tail, of about two foot long, full of angular knobs. The mouth is not placed, as in other Fiſhes, in the head, but underneath, ſomething like that of the Shark; beſides, it has this in common with that Fiſh, namely, that it has no bones, but is of the cartilaginous kind. It has pretty large eggs, from which its young are produced at a proper time. The liver is large and fat, and yields a good deal of train oil, which is the chief thing the fiſhermen catch it for: it is ſeldom eaten here, tho' ſome people firſt dry, and then export them. They are generally caught with a hook and line.

* Earum aliæ ſunt læves, aliæ aſperæ. Lævium aliæ ſtellatæ, aliæ non. Aſperarum aliæ magis aliæ minus tales. Magnitudine inter ſe differunt. Bicubitales aliquando vidit Salvianus. Gaſp. Schott. Phyſ. curioſa, Lib. x. c. 40.

SECT.

## SECT. V.

Sælhund. See Kobbe. Sælhund.

The Sey, which we in Denmark call Graaſey, is very like the Lyr before deſcribed: the head is rather more pointed, and the body ſmaller; and 'tis alſo covered with fine ſcales. The fleſh is coarſer than the Cod's, and is not eaten, except by the peaſants and ſervants. While they are young they are called Mort, and are ſeen playing about the water in prodigious numbers, where they ſerve for the food and nouriſhment of other Fiſh. When they are ſomewhat older they are called Pale, and are tolerably well taſted: as they grow ſtill larger we give them the name of Sey-Oſs; and laſtly, when they are full grown we call them Summer-Sey. Then they come in with the Summer Herrings, and purſue them along with the Whale, and other Fiſh of prey. Theſe laſt have not a greater enemy and perſecutor than the Summer-Sey. They alſo are harraſſed and purſued by the Whale; but when he cannot get any farther becauſe of the ſhallows, theſe ſmaller devourers continue the purſuit, and drive the Herrings before them into the creeks and inlets, and that with ſuch violence, that they frequently run themſelves aſhore. In Sundmoer they are often taken up in pails as faſt as the people can put them in; and there are often ſuch ſhoals of them that they incommode one another. What is moſt extraordinary is, that ſometimes this ſhoal is ſeen in the middle of the water, crowded ſo cloſe together, that they lift one another above the ſurface; and one man may, in the ſpace of an hour, take up 60 or 70 of them with a pole, to the end of which a ſtrong fiſhing hook is faſtened. They catch them alſo with angling-rods and lines, and nets; and this laſt way they will ſometimes take 200 casks of them at a draught. Sey.

The Siik, the Albula nobilis, is a ſmall freſh water Fiſh, well taſted: it is generally found with the Salmon-Trout, and is reckoned a better Fiſh; but there is no great reſemblance between them, tho' they uſually breed in the ſame lakes. Siik.

The Sild, the Herring, Harengus, a Fiſh every where known, and from our ſeas ſent almoſt all over Europe: it would therefore be ſuperfluous to detain the reader with a particular deſcription of it; a very full one may be read in Schonveldii Ichtyolog. Neucrantzii, Opuſc. de Harange, & Willoughby's Hiſt. Piſc. This laſt author calls the Herring Rex Piſcium, the King of Fiſhes; which appellation may be taken in this ſenſe; viz. that of all Fiſh there is none ſo profitable to us Europeans; for in the Netherlands Sild.

lands they reckon above 150,000 people, whose sole livelihood is the catching, pickling, and trafficking with Herrings. Here in Norway also, and especially in the diocese of Bergen, and manor of Nordland, there are many thousands of families that maintain themselves chiefly by Cod and Herring-fisheries. The Herrings alone bring in annually several thousand pounds to Bergen, Tronheim, Stavanger, and Lille-sossen, which is now called Christiansund. The Herring like the Salmon, is not to be taken by any kind of bait, nor is there ever found any food in its stomach on opening it. Hence it has been generally supposed that they live upon wateralo ne *; and we see, that out of their element they cannot live many minutes, scarce any Fish dies so quietly; which is supposed to be owing to this, that their gills are very large in proportion, and so open, that the air immediately rushes in, and stifles them. Their flesh is reckoned wholsomest when pickled, and, according to Nicol. Tulpius's Observ. Medic. p. 135, it refreshes the stomach, and promotes digestion †. The Herrings, like the Mackrel, assemble together, and follow one another in vast shoals; and it is said they have always a leader of their own species, which is eighteen inches long, and proportionably broad. This is related by Martin, in his Description of the Western Islands of Scotland, p. 143. It is said also, that the fishermen call this Fish the King of the Herrings, and never touch him, reckoning it little less than treason to destroy a Fish that has that title; but this is rather a superstition, or a fear that their fishery will suffer by it for the future, than a spirit of loyalty; for the common people here are full of these superstitions, and observe them a great deal more than the word of God. I have just observed that the Herrings follow one another, and flock together in great multitudes; from whence some are of opinion that the German name Hering is derived; but no body can form any idea of the largeness and extent of these prodigious shoals, but our Norvegian fishermen; and even what they see is but a small part of them §.

Food.

* I begin to be in doubt of this matter, since one of my correspondents has observed that the small Autumn Herrings have bit at a bait on a hook fastened to a horse-hair.

† The Emperor Charles the Vth, who was a great admirer of a pickled Herring, when he came to Biervliet in the Netherlands, in the year 1556, paid a visit to the tomb of William Bukholds, to return him thanks for his discovery and instructions in the method of pickling Herrings, printed in the year 1386, Gottfr. Chronic. Part 6, p. 635. This monarch's Spanish subjects did not acquire so much wealth from the American Gold mines, as his Netherland subjects by the Herring fishery. See London Magazine for June 1752, p. 276.

§ See Atlas Commercial. & Maritim. printed at London in 1728.

If

If infinity were applicable to any thing created, one might venture to make uſe of that word with regard to the Herrings; for each of them has more than ten thouſand grains or eggs in its roe.

The numberleſs ſwarms of theſe, as well as of Cod, &c. that come forth annually from the deep, and from their ſhelter under the great flakes of ice at the north pole, divide themſelves, according to Anderſon's obſervations, in his Deſcription of Iceland, p. 57, & ſeq. into three bodies; one part directing their courſe Southward, towards the Britiſh iſlands; another part Weſtward, towards Newfoundland, and other places in North America; and a third part to the left, along the coaſt of Norway, and afterwards through the Sound into the Baltic. In Oreſund they were ſeen formerly in greater abundance than they are now, though the Daniſh coaſts, eſpecially above Aalborg, are ſtill happily ſupply'd with them; for which we ſhould praiſe the bountiful Creator. However, theſe divided and extenſive ſhoals of Herrings bear no proportion to the innumerable multitudes that ſwarm near the North pole about the middle of the Winter. Our ſhoals of Herrings and Cod touch upon the Weſtern coaſt of Norway, principally Nordland, and afterwards on Chriſtianſund, in the dioceſe of Tronheim; and from thence quite through the dioceſe of Bergen, to the iſland of Karmen, near Stavanger. They come up to the ſhore, according to the Creator's directions, and are purſued and driven thither in inconceivable numbers, by their enemies the Fiſh of prey. Theſe are principally (as I obſerved before) the Sharks, the ſmaller of the Whale-kind, and that ſort among large ones, which is called the Herring-whale. This monſtrous Fiſh, like the chief tyrant, continually drives the large ſhoals of Herrings and Cod before him; and when, on account of his enormous ſize, he dares not venture himſelf further in between the outer iſlands and the rocks, he ſtill remains a month or ſix weeks on the watch, near the great ſand-bank above-mentioned.

Annual peregrination.

Inſtigated to ſeek the ſhore by God's providence.

This extraordinary ſand-bank runs parallel to the ſhore for about ſixty Norvegian, and above three hundred Engliſh miles. In the mean time, it ſeems as if the Whale had reſigned his command to the ſmaller Fiſh of prey, and thoſe at laſt to the Cod, and ſome others; which, while they themſelves are purſued in turn, never ceaſe purſuing the Herrings, which are a prey to every thing. How violently theſe poor creatures are harraſs'd, and driven along the ſhore, and in the inlets and creeks, may be concluded from this; that the water, though quite ſtill before, curls up in waves, where they come. They crowd together in ſuch numbers, that they

they may be taken up by pails full, and people even pick them up with their hands.

A hill of Herrings (ſo they call a large ſhoal of them) according to all the fiſhermens accounts, reaches from the bottom to the ſurface of the water, which, in the moſt places thereabouts, is an hundred or two hundred fathoms deep. They extend alſo to a conſiderable circumference. Were they all to be caught, the greateſt part would be loſt; for it would be impoſſible to get hands, tubs, ſalt, and other neceſſaries for the curing of them. Several hundred ſhip-loads are ſent every year from Bergen alone, to foreign parts, beſide the great quantity that is conſumed at home by the peaſants, who make them their daily proviſion; tho' they do but half ſalt them: theſe are called ſour Herrings, which juſt ſuit their palate*. To all this I may add, the incredible number that is uſed by way of bait for other Fiſh; for Herrings are a bait that almoſt all Fiſh are fond of: half a Herring is uſually hung to each hook at a time.

Various ways of catching.

I ſhall now give ſome account of the various ways of catching Herrings in the ſeveral ſeaſons of the year, and the difference obſerved between thoſe Herrings that are caught at thoſe ſeveral times. The firſt and largeſt, but not the fatteſt, are thoſe that generally appear on the coaſt of Norway, from Chriſtmas to Candlemas†. Theſe are called Stor-ſild, i. e. large Herrings, and by other names expreſſing their excellence. Theſe pitch upon ſome particular ſhallows near the ſhore, which are called Stiev,

* Though the Herring-fiſhery has this year, 1752, not been near ſo great as uſual, yet in theſe nine months, from January 1, to October 16, there have been exported from Bergen eleven thouſand and thirteen laſts; and by the end of the year there will be a great many more.

† A little after Twelfth-day the common people begin to look out for the Whale from the high cliffs, which prognoſticates the arrival of the Herrings. They calculate the time by an old proverb:

Sidſt i Torre og forſt i Gio
Skal Sild og Hval være i ſio.

In Engliſh:

The latter end of Torre, or beginning of Gio,
The Whale and the Herring muſt be in the ſea.

This period, according to the common opinion, depends upon the change of the moon: for the firſt new moon after Chriſtmas is called Torre, and the next is called Gio: therefore they generally obſerve the Chriſtmas moon. The Spring Whales make their appearance firſt, in great numbers, and are ſeen ten or fourteen, and ſometimes only three or four days before the great Whales, of which they are look'd upon as the harbingers or fore-runners. Theſe Spring Whales range themſelves in a line, and run over all the fiſh-grounds, as if they were intent upon driving away other ſmall Fiſhes, that the coaſt may be clear for the Herrings to diſcharge their ſpawn at the proper ſeaſon.

where

where the females every year eject their roe, and the males their milt. If the weather happens to be very ſtormy, and the ſea ſo boiſterous, that they cannot be quiet on thoſe grounds, they are forc'd to diſcharge their roe out in the main ſea; where they are obliged to ſtruggle both againſt the ocean, and their enemy the Whale, who is not a little incommoded by the ſwelling ſurges. Nor is the loſs of the Herrings the only one the country experiences at theſe times, for it is likewiſe deprived of great quantities of Cod, and other valuable Fiſh, that otherwiſe would come in to prey upon the ſpawn of the Herrings; but as that is not to be found there, they keep away.

In the mean time the country people aſſemble together upon the ſhore by thouſands, while a great number put off ſeveral miles to ſea, or between the iſlands and rocks, and in fiſhing places that are neareſt to their habitations. At this ſeaſon one may often ſee, in the compaſs of a mile, upwards of 2 or 300 fiſhing-boats lying on their ſtation for a whole month or longer, and caſting their large nets, which are 60 or 70 feet long. They generally put two of theſe nets together; and tho' there are a great many, perhaps 100 or 150 in one place, and pretty cloſe together, yet, in a few hours, they will be ſo loaded with Herrings, that they ſometimes ſink to the bottom, and are very difficult to be drawn up again. In each net they will often catch 4 or 5000 large Herrings, which hang faſt by their gills in the meſhes of the net. Towards the Spring, or in Lent, there comes a ſmaller ſort, which our people call Straale-Sild, and Gaate-Sild: they are likewiſe caught the ſame way in thoſe large ſpread nets, which for this uſe are made with ſmaller meſhes; or they are caught with the caſt-net, which is what they commonly uſe in Denmark. This is not fixed like the other, but thrown in, and dragg'd out generally full of Fiſh; for theſe ſmaller Herrings come very near the ſhore, and allure ſome of the larger ſorts before mentioned along with them, which would not venture in were it not for their company. It happens ſometimes that the fiſherman takes a ſufficient quantity at one ſingle caſt; and it is not rare, that he catches ſeveral hundred casks, and even more than he can diſpoſe of. This fact I am going to relate is ſurprizing, and what foreigners will hardly believe; but I myſelf am very well aſſured of it, and the whole city of Bergen can witneſs the ſame; namely, that with one caſt of the net here in Sundifiord, there were caught as many Herrings as filled 100 (ſome ſay 150) jaggers, each jagger of 100 ton burthen, which makes 10,000 ton taken at one draught.

When

When the Summer is pretty far advanced, or towards the Autumn, another ſort, called Summer Herrings, are chaſed to the ſhore by the Sturgeons and ſmall Whales. Theſe again differ, and are divided into two ſorts, one of which is called Bonde-Gods, or peaſants goods; the others, which are large and fat, we reckon merchants goods, and are cur'd for exportation. When theſe laſt are directly pickled down, (and not kept a whole day firſt, which ſometimes happens on account of the great numbers that are taken, and then put up in oaken barrels, for fir gives them a taſte,) they are as good in every reſpect as the Dutch, which are ſold by the name of Flemiſh Herrings; for theſe, notwithſtanding the name, are caught on the coaſt of Scotland, juſt oppoſite to us, and are, without doubt, the ſame breed. In the manor of Nordland they catch theſe fat Summer Herrings at Michaelmas, and, after the Dutch manner, in the night, with a kind of drag-net, which they carry betwixt two boats, and row gently along, about the openings into the ſea, and in the water that runs between the out iſlands and cliffs. Many hundred boats are employed there; and when the Herrings they take there are inſtantly pickled ſo ſoon as they are taken out of the net, they are inferior to none for fat and flavour *. If we were to uſe thoſe drag-nets here in the dioceſe of Bergen, (which ſome people ſeem inclinable to do) it would, without doubt, be very advantageous: we ſhould get a great number of Herrings that otherwiſe go away, particularly in thoſe years when the Summer Herrings only ſwim about the coaſt, and are too ſhy to come near it. This happened the very laſt Summer, when great ſhoals were ſeen, and went away unmoleſted. Our fiſhermen think it more adviſeable to ſtay till the Fiſh go into ſome narrow creek, where they can but barely turn; they watch this opportunity, and then ſhut up a whole ſhoal, or at leaſt a great part of it, in this creek, and there keep them priſoners till they can take them by degrees, and ſo pickle them down; but the laſt that are taken are generally emaciated and ſpoiled. It is the beſt way to keep theſe Herrings ſhut up in the creek for a day or two before they are caught, that the Roe-Aat, a ſmall and red worm, (that has been mentioned in the chapter of Inſects) which is found in their bellies at this time of the year, and makes them rot very ſoon, ſhould be digeſted and carried off. But they are often, on account of their vaſt numbers, kept thus ſhut up a fortnight or three weeks together; and, by this confine-

* Theſe Nordland Herrings are often ſo fat, that when they are put into warm ſauce, they will diſſolve away like an Anchovy, and leave nothing but the bones.

ment,

ment, many of them are quite emaciated, and others die and putrify, filling the creek with ſuch a ſtench, that the Herrings avoid the place which was their haunt, for two or three years to come. An inſtance of this kind happened in the year 1748, in Swanoe Sogn, where the fiſhermen had ſhut up an incredible number of Spring Herrings, which a citizen of Bergen bought of them for 100 Rix-dollars and a cask of Brandy. They ſay he loaded 80 jaggers with them, and left, perhaps, as many behind, to putrify on the ſand. Numberleſs Multitudes.

Of the Summer Herring kind are thoſe which have been ſpoke of before by the name of Briſlinger, or Anchovies, which differ only in the ſharpneſs of their belly; and, according to the opinion of many, are but the young fry of the common Herrings, which have not attained their full growth. Others, and perhaps with better foundation, reckon them a different ſpecies, which never grow larger. There is alſo brought to Bergen, about the beginning of December, before we have the large Herrings, that come to the coaſt about the middle of January, as I obſerved above, a middle-ſiz'd and pretty good ſort, which we call Soe!-hoved Herrings, and likewiſe a particular ſort of Cod which is called by the ſame name, the etymology of which I am unacquainted with. From this account we may ſee, that the reaſon why the Herring (as has been ſaid before) is called the King of Fiſhes, is, becauſe they are of all Fiſh the moſt ſerviceable to mankind, and are found in the greateſt abundance; and not on account of the homage paid them by other Fiſh. On the contrary, they are devoured by almoſt all other kinds, and harraſſed by all the ſea-birds; not to mention the numbers that ſerve for food for the human ſpecies, which, perhaps, do not exceed the half of what is deſtroyed. Notwithſtanding all this, the Herring kind is neither extinct, nor viſibly diminiſhed, when we take into the account what is contained in the ſea in general: in this appears the providence of the Almighty Being, by whom all things exiſt, and are continually preſerved according to his wiſe decrees. In this light the Herrings fate ſeems to be ſimilar to that of the Iſraelites; of whom it is obſerved, that not only formerly in Egypt, but at this preſent time in every part of the world, the more they are cruſhed and oppreſſed, the more they multiply and encreaſe. Blaa, or ſmall Herrings.

The Skalle, the Alburnus, is a freſh-water Fiſh, well known in Denmark. It has large ſcales, from whence it probably has its name. It is generally caught in the lakes in Romerige, Skalle.

Hedemarken, and other places; but it does not bear any great price.

Soe-Kat. The Soe-Kat, the Sea-Cat, or Gattorugive of the Mediterranean, found in Nordland, but not frequent, is a Fiſh unknown to moſt of my correſpondents. It is about two feet long; the head is quite round; the eyes are large; the belly thick, but tapering towards the tail, which ends in three points. Near the gills it has broad fins on the back, of an unequal ſize, and two ſmall ones under the mouth. The noſe has two long griſtly ſlips, like whiſkers, from which, perhaps, the Fiſh takes its name. The ſkin is brown and ſmooth, like an Eel's. The beſt part of this Fiſh is the liver, from which is extracted an oil, reckoned an incomparable liniment for the eyes.

Solv-Fiſk. The Solv-Fiſk, a name by which I ſhall call a ſmall Sea-fiſh found in Bergens-ſund, of which nobody could tell me any other name. It is about a finger and a half long, hardly half a finger thick, roundiſh, and without any great difference between the tail and the fore-part, but with a little kind of beak at the head. The ſkin has no ſcales, and is all over white, and ſhining like poliſhed ſilver. Concerning the internal parts of this Fiſh I can ſay nothing, becauſe I have only ſeen it dry, with the entrails taken out. Mr. Willoughby, Lib. iv. p. 210, ſpeaks of a deſcription that was given him of a ſmall Fiſh, of much the ſame colour and ſhape, called Ætherina; and p. 229 of another, which (as this is named by ſome) he calls Argentina. Of this Fiſh the jewellers at Rome are ſaid to make falſe pearls. Whether either of theſe be the ſame with our Solv-Fiſk I cannot ſay. "Exterius pulchre velut argento politiſſimo obductus reſplendet. Hujus uſus eſt gemmariis ad margaritas artificiales efficiendas, quæ naturales & genuinas mentiantur."

Spek-hugger. The Spek-hugger, or Vahu, is in ſhape much like a Porpeſſe, and about four feet long. It has a ſharp ſnout and very keen teeth; which, with its long projecting jaws, makes it ſomewhat reſemble the Crocodile. This is a troubleſome Fiſh to others: 'tis his principal pleaſure to harraſs and plague the great Whales, which, on account of their large ſize, are leaſt able to turn about, or defend themſelves againſt theſe leſſer creatures. Sometimes one may ſee half a ſcore or more of theſe together, fall eagerly upon the Whale, and faſten on his ſides: they will hang there an hour without looſing their hold, till they have each tore out a mouthful of fleſh of a foot ſquare. During this attack the Whale makes a diſmal noiſe, and will ſometimes jump up five or ſix feet above the ſurface of the water; at which time theſe Fiſh are

ſeen

ſeen hanging about him. Sometimes they don't leave him till they have ſtript him to the bone; and then, without doubt, they deſtroy him. After this the fiſhermen find a deal of the Whale's fleſh and fat floating on the water, which is a good prize to them; for the Spek-huggern does not eat the fleſh, but only delights in plaguing the larger Fiſh. Theſe deſtroyers are, however, themſelves deſtroyed in their turn; for when they are obſerved to run into a narrow creek between the rocks, the fiſhermen then cloſe up this place with a net, and ſo take them. Their fat is melted down for train oil, and their fleſh is ſometimes eaten, and is ſaid to be tolerably well taſted.

Spring-hvale, the Spring-Whale. See Hvalfisk. Spring-hvale.

## SECT. VI.

Steenbider, the Stone-biter, Lupus Piſcis, the Wolf-fiſh, ſo called, becauſe 'tis ſaid it can bite pebble-ſtones to pieces with its exceſſive ſharp teeth. Againſt theſe the fiſhermen are obliged to be upon their guard; for when they once faſten upon a man, they never quit their hold till the bone cracks. Their length is about a foot and a half, or two feet; their skin is of a dark colour, and as ſmooth as that of an Eel, which they reſemble in the hinder part, excepting that they are ſomething broader, and have a ſort of hanging fins along the back. The head, which is thick and round, has an odd appearance, and is not unlike that of a cat, with two rows of teeth, in the upper and lower jaw. The fleſh of it is hard, but fat; and is much eſteemed by the common people. It is caught with a line, and often ſtuck with a Salmon-ſpear, when it is ſeen through clear water, on the ſandy bottom, where they continually harraſs and devour the Lobſters. Steenbider.

The Steen-Broſmer, alſo called Tangſperling, becauſe it lives generally amongſt weeds, and, perhaps feeds upon them, is long and narrow like an Eel, but the head is almoſt like that of a Pike, and is ſpeckled with dark ſpots. The back, as well as the belly, has ſeveral broad and ſtrong fins running the whole length of it. They are moſtly found in Nordland, and are there look'd upon as an eatable Fiſh. In taſte they are much like the Lamprey. The roe is the moſt eſteem'd part. This is, indeed, well taſted, and fat in appearance, and ſeems to be the ſame Fiſh which the Dutch call Sandkroeper. By ſome authors it is reckoned a kind of Torpedo. Steen-Broſmer.

The Steen-Ulk, Rana Piſcatrix, the Frog-fiſh, by the Engliſh and the Sicilians called the Sea-Devil, becauſe of its frightful Steen-Ulk.

ſhape

ſhape and its fierceneſs. Some writers deſcribe this Fiſh a foot long. In this country they are ſeen, tho' ſeldom, about ſix feet long; and this is their natural ſize. The ſample I have is much larger, being full ſeven feet, and perhaps it is ſhrunk a good deal in drying. The bones of it are rather griſtly than hard; the colour is white underneath and darkiſh above. The head is ſo large, that it makes above one half of the Fiſh: adjoining to it there is only a little narrow body, which terminates in a very ſharp-pointed tail. It has ſeveral fins, the largeſt of which are the two under the head. Upon the bone of the ſnout there is an erect, long, narrow ſlip: the eyes are very large; and the jaws open very wide, and are ſet with many rows of ſtrong teeth: the lower jaw is longer than the upper, and may be ſtretched quite open. When he does that we have opportunity to ſee the tongue, which is thick and broad, and has, on the upper part, a number of ſharp teeth or points, like thoſe in the jaws; ſo that no Fiſh can poſſibly bite more terribly than this. All round the under jaw-bone there hangs ſeveral ſlips, or falſe fins, of a griſtly ſubſtance, about four inches long: theſe ſlips, before the Fiſh is dried, look like ſo many worms. Theſe the Steen-Ulk makes uſe of to decoy other Fiſh with, when he wants to catch them. To this end he will get upon the edge of a rock, and open his jaws very wide: this vaſt mouth the other Fiſh, who are ſtriving to get the ſuppoſed floating worms, take to be an opening or crack in the rock, ſo fall a prey to this Fiſh, and are devoured unawares. Gaſp. Schottus, in his Phyſica Curioſa, Lib. x. c. xli. p. 1142, ſays of this voracious Fiſh-hunter, that the above mentioned long and narrow bone that ſtands upon the ſnout of it, and hangs into the water, ſerves alſo as a bait to decoy the Fiſh: this may poſſibly be, tho' I ſhould rather think that the creature uſed it to ſtrike ſmall Fiſh with. This Fiſh eats every thing that comes in its way. L. C. he ſays, "Cibus præter piſces etiam caro humana, ſi copia ſuppetat. Geſnerus refert ſe audiviſſe, natantem aliquando virili membro apprehenſum detraxiſſe in profundum." It is ſeldom caught, except by accidentally coming unawares into the net with other Fiſh. This Fiſh is found chiefly under the rocks, or among the weeds *.

Stilling. Stilling. See Hundſtigle.

* P. S. There has been lately caught a Rana Piſcatrix, without any thing in its ſtomach but Muſcle-ſhells, and a pretty large ſtone. The Fiſh ſtood upon his defence againſt the Fiſhermen, who being near the ſhore, knock'd it on the head with the boat-hook.

The

The Storre. or Storje, Sturio, the Surgeon, is an excellent Fiſh for the table; it is ten or twelve feet in length, and very ſtrong and voracious. We have here, beſide the true Sturgeon, four different ſorts of Fiſh, called by this name, with the addition of the names of thoſe on which they feed, and of which they may be accounted the greateſt enemies. Some are called Salmon-ſtorjer, others Mackarel-ſtorjer, others Herring-ſtorjer, and again, others Sey-ſtorjer *. They come towards the ſhore about Midſummer, with the Summer-herrings, which they drive along at ſuch a violent rate, that they will raiſe themſelves above the ſurface of the water in the purſuit. They do not ſwim together in ſhoals, or extend in breadth, but follow one another in a ſtrait line, laying hold of each other's tails. When a whole ſtring of them is ſeen thus together, they are ſometimes taken for the great Sea-ſnake, of which I ſhall treat hereafter. Storre.

The Sturgeon is ſometimes caught in the Salmon-nets, or ſtuck with a harpoon, called here a ſkottel. The fleſh of it is finely interlarded with fat, and a ſingle Fiſh will fill two caſks. They are pickled down, and the peaſants reckon them a great delicacy: they likewiſe cut them into ſlices, and make what they call rekling of them. The Salmon-ſtorjen is the fatteſt, and out of its head alone may be extracted ſometimes a half caſk of oil. This Storjer, which is a large Fiſh of prey, deſerves the name Accipenſer among the Fiſh, as well as the hawk does that of Accipiter among the birds. There is alſo caught here, tho' ſeldom, another ſort of Fiſh of the ſame name, which is quite harmleſs; this is the true Sturgeon. It has no teeth in the jaws, and is obſerved to ſuck the ſlime at the bottom of the ſea, which is their only nouriſhment. The Sturgeon fattens, like the Salmon, in rivers and freſh water. "Sturio nunquam fere vel certe rariſſime in prælto mari capitur. Maria eum gignunt, ſed flumina maxime nobilitant. Pingueſcit enim dulcium aquarum hauſtu. Dum eſcam quærit, more ſuis terram ſub aquis roſtro fodit, &c." Willoughb. L. iv. c. 22, p. 240. I have one of theſe ſort of Stor, caught ſome time ago in Nordfiord, in my collection of the ſcarce Fiſh of this country: it is almoſt eight feet long, the head at firſt ſight appears ſomething like a Pike's, but inſtead of the mouth it has a kind of a ſnout, with ſeveral ſlips or beards hanging down under the head. The mouth is placed in the middle under-

* Sturio nomen Gothicum eſſe aſſerit Jul. Cæſ. Scaliger, & ab ea gente in reliquam Europam tranſlatum. Quod facile mihi perſuaſero. Stur vel Stoer magnum notat in noſtra lingua, quocirca probabile eſt, ob magnitudinem ſuam hoc generali nomine appellatum quoque fuiſſe hunc piſcem. Accipenſer veterum eſſe videtur & galeus Rhodius Athenæi, Auſonio ſilurus, nobis Stoer. Ol. Worm. Muſ. p. 273.

neath, like that of the Shark, but is differently formed from the Shark's, for it is quite round, and about two or three inches diameter. The mouth is not armed with teeth, either for uſe or defence, as has been ſaid before, for their food is only what they ſuck up at the oozy bottom of the water. As this Fiſh is thus unarmed, and incapable either of defending itſelf, or of hurting other Fiſh, the marks of Providence appear in its peculiar ſtructure; for it has defenſive weapons of an extraordinary ſize: theſe are thick and broad ſcales, or plates of bone, which cover almoſt all its body, and ſerve as it were for a coat of mail. Theſe plates of bone, for ſo they may properly be called, are ſixty-four in number, every one of which is as big as a crown-piece, but ſomewhat oval *. They may be divided into five rows. The middle row is angular, and runs all along the back; their fins and tail are very much like thoſe of the Shark. The gills are pretty wide, and guarded with very ſtrong bones. In all this we may obſerve how wiſely God has formed every creature to anſwer his purpoſes and deſigns.

God's providence.

Swærd-fisk. The Swærd-fiſk, or, more properly, the Saug-fiſk, the Saw-fiſh, Priſtis, or Serra Piſcis: Thus Cluſius Exot. L. vi. c. 9, calls it, becauſe of its long and flat noſe, or rather the flat horn, that it has on the upper part of the ſnout. This horn is ſet on both ſides with ſmall ſpines, or teeth, like thoſe of a ſaw, from whence it has its name. The dry'd Saw-fiſh that is in my poſſeſſion is about three feet ſix inches long, and about three fingers broad, but they grow much larger, this being but a young one; it has twenty-five teeth in each jaw, which are about a finger's breadth diſtant from each other.

This Fiſh is ſhaped almoſt like a Spring-whale, but has not ſuch a ſharp head, nor is it of the claſs of Whales, according to the opinion of the before-quoted author and others. On the contrary, he often attacks the Whale, and with his ſaw tears him under the belly, ſo that he makes a terrible roaring, and jumps up above the ſurface of the water, in order to eſcape from it. This Fiſh is but ſeldom ſeen in our ſeas. Its proper reſidence is about Spitzberg, Iceland, and Greenland. See more on this head in Martin's Spitzberg Travels, Cap. vi. No. 7. It is alſo frequently ſeen on the coaſt of Guinea in Africa; and in the General Collection of Voyages and Travels, Tom. v. p. 321, it is ſaid, that

* Ordines officulorum in cute 5. ſunt, ſed medius tantum ordo, qui 15. circiter officulis conſtat, anguloſus eſt, cujus nimirum ſingula ſquama ephippium forma refert, per medium dorſum ſecundum totam longitudinem in proceſſum tenuem & ſecantem aſſurgens, poſterius adunco fine terminata. Lateralia officula ut & ventralia rhomboidea & fere plana ſunt, &c. C. Linnæus in Fauna Suec. p. 102.

out

out of a particular veneration for them, the inhabitants of that country never take them, unleſs it be by accident; and then the ſaw is held for a fetiſſo, or ſacred relick, by the idolaters.

## SECT. VII.

The Tart, or Pinke, is a ſmall kind of Salmon, and differs but very little from the common kind, except it be in ſize; for it is not as big as the Salmon when full grown. It is therefore conſidered as a particular kind; though by ſome writers it is thought to be no other than a young Salmon. Tart.

Torſk, the Cod-fiſh, Morhua, ſive Aſellus Major. This well-known Fiſh, with the Herrings, affords the beſt part of their livelihood to the inhabitants of this kingdom. They are chiefly caught along the Weſtern coaſt. They ſtay here all the year, and are taken in great quantities: but as we have more than one ſort of Cod-fiſh, and the ſeaſons and manner of catching them are different, according to their ſpecies, &c. I ſhall dwell a little upon the ſubject, and give a more full and exact deſcription, as I have done with regard to the Herrings. Torſk.

The large Cod is called here Skrey, and alſo the Spring Cod. Theſe, in moſt years, come in great abundance to the ſhore in Winter, preſently after the firſt Herrings, and are then fat and large. They come in to pick up the young fry of the Herrings, or the Spawn, juſt diſcharged on the ſholes *, and at that time they do not care to bite at the hook, but are caught in great numbers in thoſe nets which they call ſetnings-garn. Theſe are made of packthread, and work'd pretty large; each meſh is four inches ſquare, and there are about 15 of theſe meſhes in breadth; ſo that the net may be near a fathom wide, and full twenty fathoms in length. Of theſe kind of nets they uſe in bad weather about eighteen, but in fine weather twenty-four, to one large boat with ſix men: ſo that when the whole number is ſix'd, they extend to a length of 480 fathoms, in about fifty or ſeventy fathoms water. They have buoys fixed to the nets, to ſhew where they are placed. About this coaſt we do not uſually extend them to ſuch a length, but are ſatisfied with ſixty or a hundred fathoms. Theſe nets in twenty-four hours will fill a good large boat with Fiſh. They go out in the afternoon, and ſet thoſe nets, and early the next morning they take them in again; and they frequently find three, four, or five hundred large Cod in Way of catching them.

* When the Cod is expected, then our Sundmoer peaſants look upon a violent ſtorm, with a North-weſt wind, which they call Grundſtod, to be the effectual means of driving them to the coaſt, and to promote their fiſhery; therefore, at that time, they pray to God for ſuch ſtorms as at other times they beg to be delivered from.

each

each net, When theſe Fiſh have been on the ſhallows a few weeks, and have devoured a good deal of the Herrings ſpawn, and diſcharged their own, they become more greedy, and begin to bite at the hook: this is baited with Herring or Cod's belly.

This kind of fiſhing laſts till about Eaſter, and then they leave the coaſt, and are quite lank and emaciated. Juſt before Eaſter theſe are ſucceeded by another kind, called Klubbe-Cod, or Kabiliau, which is much larger than the Spring Cod, and is remarkable for a great head, and a very ſhort tail. Theſe are firm, and then in ſeaſon. They are caught with a hook and line. Towards Michaelmas there comes a third and ſmaller ſort, called the Red Cod, from the colour of its skin. It is alſo called the Tarre Cod, becauſe they are found among the weeds, which are called in our language Tarre. About December a fourth ſort comes upon the coaſt, which we call Soelhoved-Torsk. This is of a yellowiſh grey, pretty large and firm, but it has a ſmaller head than the laſt mentioned. Theſe, as well as the former, are caught, as we expreſs it, partly with a ſmall line, and partly with a ſtrong one; which words I ſhall here explain for the benefit of thoſe who are unacquainted with the ſeveral methods of fiſhing. A fiſhing-line, or, as they call it here, a Linie-va, is a rope ſeven or eight hundred fathoms long, to which are faſtened about 200 hooks, with a piece of Herring on each for a bait. This long line, with the hooks, is let down one hundred, and often 2 or 300 fathoms deep, and extended on the bottom of the ſea. From this to the ſurface of the water is carried another line, and to this buoys are fix'd, to mark the place. When the Linie-va is drawn up, there is ſometimes a Fiſh on every hook, Cod, Ling, Turbot, or others. The ſmall line is, on the contrary, very fine, and hung out of a boat, in about ſeven or eight fathom water. As they are continually rowing about, there is a man conſtantly watching them, to pull up each line, as ſoon as the Fiſh is perceived to bite. By either of theſe ways a boat is often fill'd with Fiſh two or three times in twenty-four hours. In the manor of Nordland, above Tronheim, the fiſheries are by much the moſt conſiderable, though the Sundmoer and Nordmoer fiſheries have, for a few years of late, been as good. Formerly they uſed to catch Cod only with theſe two ſorts of lines; but, as I have already obſerved, the Spring Cod do not care to bite at the bait at firſt, becauſe they are plump and fat, and are ſatisfied with the ſpawn of the Herrings, which they are extremely fond of. Upon this account they have, within theſe twenty or thirty years, begun to fiſh for Cod, as they do for Herrings,

Herrings, with thoſe ſettnings-garn, or ſett-nets. This has occaſioned ſeveral law-ſuits in the country, and at length a general controverſy, which is as much ſharper, as it is more important, than many of the trifling diſputes which engage our learned writers. However, the fiſhermen and peaſants are agreed in this point, namely, that it is the duty of an honeſt man to ſhut his eyes and ears againſt all new diſcoveries, and obſtinately to inſiſt upon it, that all things ſhould remain as they were in the time of their fore-fathers; that method being apparently the beſt. They have repreſented at the courts of juſtice, and at their ſeveral meetings on this occaſion, that nets fright the Cod away, and ought not to be tolerated, but conſidered as a pernicious innovation. Theſe objections, on the other hand, are contradicted by experience, which is the beſt inſtructor; for it is undeniable, that ſince theſe nets have been uſed, there has been exported from this city, and, in all probability, from other parts of Norway, a much greater quantity of Fiſh than ever. The truth perhaps is, that nets, which are very beneficial to the public, may perhaps prejudice ſome few private people; I mean ſuch as either will not, or are not able to furniſh themſelves with thoſe expenſive large ones above-mentioned. It is indeed a general, but very true obſervation, that the rich and wealthy have frequent opportunities of increaſing their wealth, at the expence of the poorer ſort of people. What enhances the price of nets is, that when the Winter proves ſtormy and tempeſtous, it deſtroys the nets on theſe coaſts, to the value of ſeveral thouſand dollars; which is a very conſiderable loſs to the owners.

Strong controverſy.

I ſhall now give ſome account of the ſeveral methods of curing this Fiſh, and making it fit for exportation. They are either ſold as ſalted Cod, Titling, Roskiær, Rundfisk, or Klipfisk *. The firſt ſort, namely Salt Cod, is thus prepared: after the head is cut off, and the entrails are taken out, it is put into a large tub, and ſtrew'd over with French ſalt as it is put in: when it has lain about eight days it is taken up, and laid in heaps, for the pickle to run off; then it is packed up in casks, with Spaniſh or Portugal ſalt, the better to preſerve it. Titlinger is the name of the leaſt ſort of Cod, which are only hung up on lines, and ſo

Various methods of curing them, and their exportation.

* Under theſe various names of dry'd Cod, which in Denmark are all comprehended under one name, viz. Rock-fiſh, there has been exported from this city in the preſent year, 1752, during nine months, namely, from the firſt of January to the 16th of October, 317,804 nett-weight, each weight being 36 pounds, beſides a great deal of pickled Cod in caſks; from which may be ſeen the goodneſs of the Creator, and the immenſe wealth contained in the North ſea. Great quantities of Cod are likewiſe exported from Tronheim, Chriſtianſund, and Stavanger; and for this purpoſe alone there is annually imported to Bergen 40,000 tons of Spaniſh and French ſalt.

dry'd. Roskiær Cod is ſlit up the back, and then dry'd. Rundfisk, or Round-fiſh, is that which we commonly call Stock-fiſh: this is dry'd without ſlitting. The Klip-fiſh is ſlit like the Roskier, and is dry'd by ſpreading it on the cliffs, from whence it has its name. The goodneſs of theſe ſeveral ſorts depends chiefly upon the weather in which they are cur'd; for if it does not happen to be dry enough for the Fiſh to be thoroughly penetrated by the wind and cold, they are apt to look red, particularly near the bones. Hence the Nordland Round-fiſh is reckoned the beſt, becauſe the cold being more intenſe there, penetrates them ſooner than in other places. In the Baltic we ſell moſt ſalt Cod, but at Hamburgh, Bremen, and Amſterdam, the dry; from whence they are carried up the rivers all over Germany. Some are exported to Flanders and England, but not ſo many as to Italy, Spain, and other countries in the Mediterranean. As for the French, they trade themſelves in this branch, ſince their fiſheries in North America have been brought into a good condition. The Fiſh are ſo well cured there, that in moſt markets they give them the preference to ours: but our good Norvegians, who have been longer uſed to it, ought certainly to equal, if not excel them, in this particular; or, at leaſt, they might follow their method. If this be too difficult a task, were they to ſend ſome people thither to learn the art, it would be very well worth while. To travel, in order to make improvements in trade and commerce, would be more laudable in our young men of fortune, than any other end they can propoſe to themſelves in viſiting foreign countries.

Cods roe. Notwithſtanding this, the French cannot do without the ſpawn of our Norway Cods, which they uſe by way of bait, to ſtrew in the ſea when they catch what they call Sardeller, a ſort of Fiſh ſomething like our Herrings. For that purpoſe ſeveral thouſand caſks of cods roe are ſalted down every year in Norway. Within theſe twenty years particularly, the demand has been ſo great in France, that we have exported thither annually fourteen or ſixteen ſhip-loads of roes only, beſides a ſmall quantity which they carry in their own bottoms.

Train-oil of the liver. From the liver of the cod there are extracted ſeveral thouſand caſks of good train-oil *. Beſides all this, we uſe the long air or ſwimming badder, which lies along the Cod's back-bone. This

* Our peaſants do not melt it down, but throw it into a veſſel, and ſo let it diſſolve of itſelf. The oil extracted from Cod only (not reckoning that from other fat Fiſh, as the Sælhunde, Springere, and Marſviin) exported from Bergen annually, amounts to 7000 caſks, and ſometimes more. We reckon generally that 200 Cods yield a caſk of train-oil.

is

is dry'd, and ſold by the name of Sunde-Maver. It is eaten by ſome people, and is reckoned to create an appetite, agreeable to its name.

The Tunge, the Saal, Solea, an agreeable Fiſh of the Flounder kind, for which reaſon, not to repeat the deſcription, I ſhall only obſerve, that the principal difference conſiſts in its being better taſted, and having firmer fleſh. Tungerne are in ſhape rather long than round, reſembling the ſole of the foot; and are caught here in many places, but not in any great number. Tunge.

## SECT. VIII.

Valrus, or Roſmul, and in our old Norvegian, Roſtungus, Roſmarus, the Wallruſs, or Sea-Horſe, is ſeen ſometimes on this coaſt, but not ſo frequently as about Iceland or Spitsberg, where, according to Marten's Spitsberg Travels, chap. iv. they are found in incredible numbers, ſeveral thouſands being often ſeen together *. Their body and head are like thoſe of a large cow: they have ſhort hair on the skin like the Sea-Calf; but what is moſt remarkable, is their two large teeth, or tusks, which project out of their mouth, and are full 18 inches long: theſe are as good as ivory for any kind of turn'd work; and therefore this creature is called by ſome the Sea-Elephant. With theſe teeth it is ſaid they bite, or occaſionally faſten themſelves to a rock while they ſleep; and they uſe them alſo to dig in the ſand for muſcles, which are their principal food. Valrus.

They are ſaid to lift their heavy bodies upon the flakes of ice, and rocks, by the help of theſe teeth; where they are found like the Sea-Calves. The anonymous author, whoſe account of the Whale-fiſhery is prefixed to Peyrerii's Deſcription of Iceland, relates, p. 114, what he ſays he had been an eye-witneſs of, namely, that where they are killing one of theſe creatures, ſeveral more of the ſame kind will come to their aſſiſtance; which they frequently do, and with their large teeth before-mentioned, make a violent attack on any thing that oppoſes them. Olig. Jacob. informs us, in his Muſ. Reg. p. 15, that the Wallruſs's fierceſt battles are with the great White Bear; from which we may conclude, that, like amphibious creatures, they ſometimes ſeek the dry land, or the mountains of ice that abound in thoſe ſeas. Anderſon, in his Deſcription of Iceland, p. 222, ſays, that they

* A quite different Sea-Horſe ſome of our fiſhermen pretend they have ſeen ſometimes, which has appeared to them to be 20 or 24 feet long, with the head, neck and mane, which it generally holds above the water, exactly like thoſe of a real horſe, and not to be diſtinguiſhed, but by the ſize: its colour, they ſay, is as white as ſnow; but of this there is no confirmation.

have

have two breathing-holes in the forehead, and four ſhort legs. A Nordland fiſherman has aſſured me, of his own knowledge, that it is in vain to ſhoot at them with balls; for their hide is ſo thick, that a good ſharp harpoon is the only thing that will pierce it. I have ſeen this creature dry'd at Leyden, in the gallery of the Phyſic Garden; but there it goes under the name of a Sea-Cow, which creature it more reſembles than a horſe, tho' there is a Sea-Cow different from this.

Vas-Sild. The Vas-Sild, or Vas-Herring, is, to appearance, much like the other Herring; except that the head is ſomething ſhorter, and the eyes as well as the body a good deal larger. They bite at a hook and bait, but their fleſh is not ſo good as the Herrings.

Ulk. The Ulk, or Marulk, the Sea-Scorpion, called by the Ichthyologians Scorpius Marinus, becauſe its bite is poiſonous: this Rondelet aſſerts upon experience, with this addition, that he cured a child that was bitten by one of theſe creatures, by applying the liver of this Fiſh to the wound. Willoughby, Lib. iv. c. 38. after this author, diſtinguiſhes them into two kinds; namely, the ſmall ſort, which it is ſaid does not weigh a pound; and the larger. The latter alſo differs in ſome other reſpects from the former, and is often four feet long: the head is bigger than the whole body, and is of a hideous aſpect: the mouth is a foot wide, and therefore this Fiſh is by ſome called Wide-jaws; and with us they uſe their name, as a figurative deſcription of a perſon who has a remarkably wide mouth. The body, which is reddiſh, is covered with ſmall ſcales, much like a Snake's: a ſtrong fin, with ſharp points or prickles, runs along their back. The liver is the only part of this Fiſh that is uſed, which yields good train-oil. They are very voracious, and will deſtroy not only other Fiſh almoſt as big as themſelves, but alſo many of the ſea-birds, particularly the Gulls and Divers.

CHAP-

# CHAPTER VII.

Concerning exſanguious Fiſh, or thoſe without blood; which are either incloſed in a ſhell, or are naked and defenceleſs.

SECT. I. *Their general diviſion.* SECT. II. *Of Oyſters, Top-Oyſters, and thoſe with a large ſhell, long ſhell, or ſhort ſhell.* SECT. III. *Muſcles, Pearl-Muſcles; and ſome account of the Pearl-fiſhery in Norway.* SECT. IV. *Cockles of various ſorts.* SECT. V. *Igel-kier, and Sea Hedge-hog.* SECT. VI. *Lobſters, and their advantageous fiſhery in this country.* SECT. VII. *Craw-fiſh, Crabs, and Shrimps.* SECT. VIII. *Blek-ſprute, various kind of Croſs-fiſh, or Star-fiſh, Manæte, and Perle-Baand.*

## SECT. I.

HITHERTO I have treated of ſuch Sea-animals, caught about the coaſts of Norway, as are properly called Fiſh; theſe have bones, or cartilaginous ſubſtance, and blood in them. I now come to certain kinds, which are very different, and by Ariſtotle, Lib. i. Hiſt. c. iv. and Lib. iv. cap i. are divided into four kinds of Animalia exſanguia; namely, the Soft kind, the Cruſtaceous, the Teſtaceous, and the Inſects. Pliny makes but three claſſes of them, when he ſays, Lib. ix. c. 28, "Piſcium quidam ſanguine carent, de quibus dicemus. Sunt autem tria genera. Imprimis quæ mollia appellantur, dein contecta cruſtis tenuibus, poſtremo teſtis concluſa duris." I ſhall adopt this laſt method of claſſing theſe kinds, only inverting the order with reſpect to their form and uſe. Difference and diviſion.

Firſt, therefore, I ſhall ſpeak of the teſtaceous kind, or thoſe that are confined in hard ſhells, in which they live as it were in a houſe; ſuch are Oyſters, Muſcles and Cockles. I ſhall after theſe treat of the cruſtaceous kind, that is, thoſe which are ſurrounded with a thin ſhell, that is ſhaped like, and juſtly adapted to, their bodies: of this ſort are the Lobſter, the Craw-fiſh, the Crab, the Shrimp, and the Sea Hedge-hog. In the third place I ſhall deſcribe the naked, or ſoft and defenceleſs ſort: ſuch are the Scuttle-fiſh, various kinds of Star-fiſh, and other curious ſpecies, to be nam'd in their order. If theſe kinds were very numerous, I ſhould treat of them alphabetically, as I have done in the preceding chapters, in deſcribing other ſpecies: but as the difference in theſe is much more perceptible, and the bounds I have preſcribed myſelf

myſelf but narrow, I think it more eligible to follow the natural order. This I avoided in my Account of Birds and Fiſhes, for reaſons aſſigned under their reſpective heads.

## SECT. II.

Oyſters. Oyſters, Oſtreæ: we have theſe, particularly on the weſtern coaſt, both in quantity, ſize and flavour, ſuperior to almoſt any others in Europe; but this ſpecies is very different from the common ſort. Thoſe of the ordinary ſhape and ſize may be arranged into three ſorts, according to the ground where they are taken; namely, the Rock-Oyſters, the Sand-Oyſters, and the Clay-Oyſters: theſe laſt are the worſt ſort, and not regarded when the two former are to be had; for the thick ſlimy bottom they live upon, gives them a kind of muddy taſte. The Sand-Oyſters are preferable to theſe; and are of the ſame kind with thoſe, which they take on the ſands at Tondern and Fladſtrand, in Denmark. Theſe are of a good flavour, and free from that muddy taſte; but they are not ſo large and full as the third ſort, namely, the Rock-Oyſters, ſo called, becauſe they ſtick to the rocks, under high-water mark. Theſe, eſpecially the larger ſort of them, which the Dutch call Groenbartjes, or Greenbeards, are excellent: their ſhells are much thinner *, but the Fiſh is twice as big as thoſe taken at Tonder or Fladſtrand. Theſe are very fat, and have a good flavour, except it be in the four Summer months; during which time they are out of ſeaſon with us, as in other countries where they are found. Our fiſhermen uſe a kind of wooden pincers to break them from the rocks, with which they take off one or two at at a time.

Beſides thoſe that are eaten freſh in the country, great quantities are pickled, put up in barrels, and exported to many places in the Baltic. There are ſometimes pretty large pearls found in them, but ſeldom of that purity or perfection as to have their full luſtre. It is ſaid the Crab and Star-fiſh often feed upon the Oyſter; and that they uſe this ſtratagem to prevent their being pinched by the ſhell; for while it is open they throw in a ſtone, which hinders it from ſhutting cloſe, and then the Oyſter becomes an eaſy prey to them. They ſeem to exceed the wily fox in this

* How thin and flat the Rock-Oyſters are, we may know by their tranſparency when held againſt a candle. The Sand and Clay-Oyſters have foul ſhells, three or four times as thick as the latter, and conſequently take up a great deal more room in the caſks. On the eaſtern coaſt they have Oyſters of a monſtrous ſize. In the king's Muſeum at Copenhagen there are two Oyſter-ſhells, which were drawn up with a cable at Goa, each of which weighs 224 pounds; they are five feet in diameter, and the Fiſh was ſo large, that every one of the ſhip's crew had a conſiderable piece of it.

par-

particular; for that animal, notwithſtanding all his cunning, often puts his paw, or even his tongue in the ſhell, and then the Oyſter holds him faſt; ſo that he is ſometimes drowned by the ſpring-tides. We have ſeen ſeveral inſtances of this on the coaſt of Norway.

The Stor-Skal, the Large-ſhell, or Stor-Skiæl, called alſo the Kierling-Ore, the Scallop, Pecten, is another kind of Oyſter, twice as large as the common ſort. The ſhell of this Fiſh is thin, white, and ſtriated like the Cockle-ſhell. The upper ſhell is quite flat, the under one concave. They are not found in any great numbers, nor are they eaten here: the ſhell only is uſed to ſtew or ſcollop other Oyſters in. Theſe are alſo called Spaniſh Oyſters, becauſe the ſhells are uſed to beautify grottos, fountains and caſcades, and are imported for that purpoſe from Spain, as alſo from Iceland; where this ſort is ſaid to be more frequent, and more beautiful than ours. Large-ſhell.

The Top-Oyſters, Patella, the Limper, are alſo called Half-Oyſters, becauſe they have only one ſhell; this is round, convex and ribbed, and of a duſky colour: this alone covers them; on the other ſide they ſtick faſt to the rock. They are called alſo Elbow-ſhell, becauſe they reſemble the elbow when the arm is bent. They are not eaten here; but the French ſailors are very thankful for them, when they come to our ports. M. Tournefort calls them Yeux de Bouc, or Goats Eyes, and gives a full and anatomical deſcription of the Fiſh contained within them, in his Voyage du Levant, P. i. p. 94, & ſequ. This looks more like a Snail than an Oyſter, and has a ſmall head, and two horns or Tentacula; but its ſhell ſeems to entitle it to a place in this claſs. Top-Oyſters.

The Lang-Skiæl, the Long-ſhell, the Solen, or Razor-ſhell, conſiſts of two ſhells of equal convexity, about ſix inches long, but hardly an inch broad. Theſe ſhells are white within, and covered on the outſide with a dark-coloured ſlimy ſubſtance, which often peels off when they are dry. The Fiſh is not eaten here, but only uſed for a bait *. Geſnerus calls it Dactylus, and ſays the Fiſh keeps always one end of the ſhell open, in order to put out its head in queſt of food. Long-ſhell.

There are found here beſide theſe, two different ſorts of Shell-fiſh, but ſmaller, which I rank among the Oyſter-kind: theſe are not larger than a crown-piece, and ſome, much leſs. Theſe two ſorts differ not only in ſize, but in the ſhell; for the ribs on the ſurface of the one run like the radii from the center, whereas they are ſo many concentric circles on that of the other. Both

* The colour of the Fiſh is reddiſh; they often leave the ſhells, tho' their bodies ſeem very delicate, and are ſometimes ſeen ſwimming in the water without them.

ſorts,

ſorts, as far as I have been able to learn, go by the name of the Short-ſhell, and are uſed, as moſt of the former, only for baits on the fiſhing-hooks. The Scots eat them like Oyſters. They are found commonly covered on clay-ground. The inſide of theſe ſhells affords that fine chalky ſubſtance, which is reckoned a very good abſorbent, and is alſo produced by the thick common Oyſter-ſhells; but they muſt be firſt as it were calcined by the air. Their manner of breeding can only be conjectured by the ſmall ſhells, not bigger than the ſcale of a Fiſh, which ſtick frequently to them; which ſeems to proceed from that part of the ſhell which the Oyſter always keeps cloſe, like a hinge.

Enquiry. If we enquire how all the ſhells of theſe various kinds of Oyſters grow, and widen with the encloſed Fiſh, tho' it is not, like the Lobſters thin cruſtaceous covering, as it were concreted from the body of the Fiſh, but is evidently nouriſhed from without, and enlarged from the ſand and ſlime of the ſea; if we make this enquiry, I ſay, we ſhall hardly find any ſatisfactory account of it hitherto given. Nothing yet propoſed will ſuperſede our enquiring after the ſomething unknown, or the occult quality of our old Ariſtotelians, as they expreſſed themſelves; for they, at leaſt in the eyes of the world, would not appear to be entirely ignorant, but had ſomething to ſay upon every ſubject.

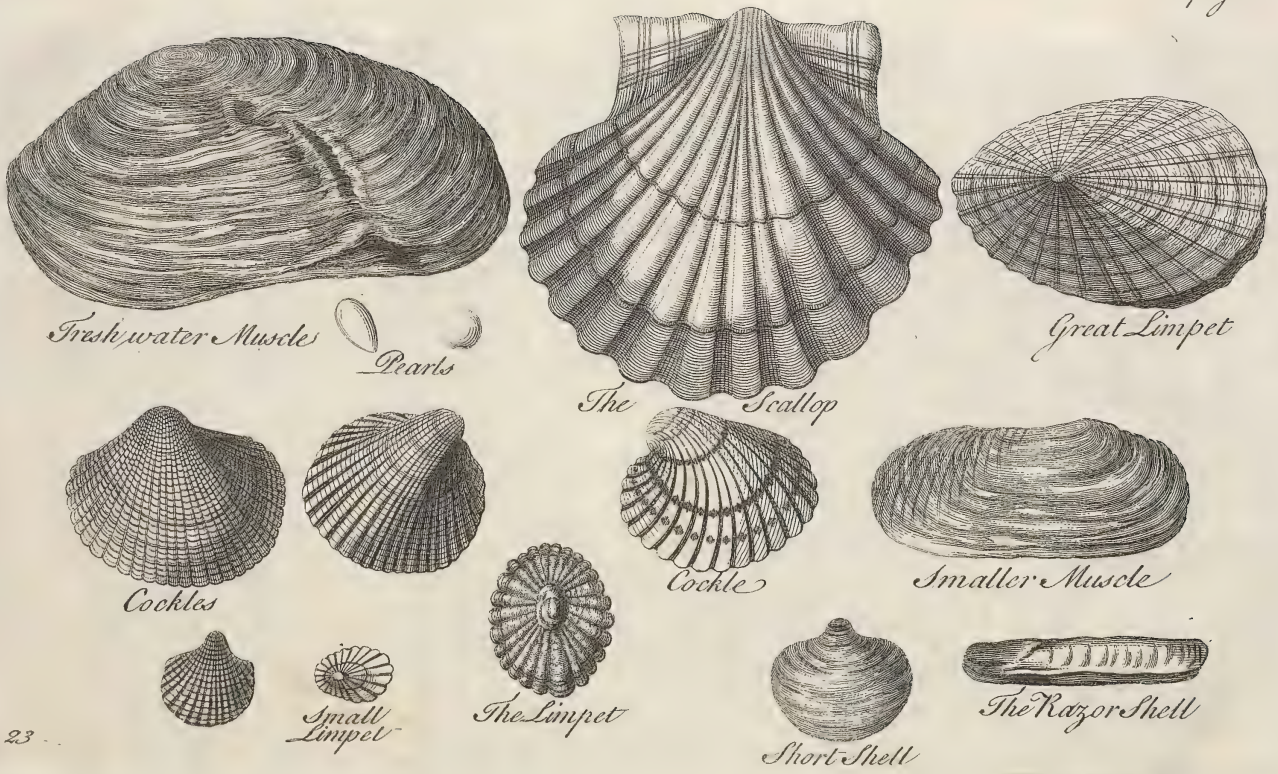
The wiſdom of God is moſt wonderfully diſplayed even in his minuteſt works; and our knowledge is but very imperfect, not only with regard to theſe, but of the greater works of creation, and their particular properties; tho' this is an age which would pretend to open all difficulties, like ſo many locks, with the maſter-key of demonſtration *.

## SECT. III.

Muſlinger. Muſlinger, or Cockles, Pectunculi, which we otherwiſe call, by way of eminence, the Shell-fiſh, are in plenty here as in other places, namely, the common ſort, and thoſe which are alſo called the Crow-ſhell, from the crow, who is very fond of them, and tries his skill by opening them in this manner: the bird picks the ſhell up in his bill, and flies up very high, and then drops it on the rocks, which breaks the ſhell to pieces. Theſe are pickled, like Oyſters, for exportation.

* The curious Frid. Chriſt. Leſſer, in his Teſtaceo-Theologie, P. I. L. i. c. iv. §. 116. advances ſomething on this head; but at the ſame time owns that we cannot inveſtigate the true cauſe of this wonderful production, nor of many other particulars in the works of nature.

The


Fresh water Muscle
Pearls
The Scallop
Great Limpet
Cockles
Cockle
Smaller Muscle
Small Limpet
The Limpet
Short Shell
The Razor Shell

The Oes-Skæl, or Muſcle, differs a good deal from the former, being of a larger ſize, and is not reckoned fit to be eaten; but they are only uſed, as ſome of the aforeſaid Shell-fiſh of the Oyſter kind, for baits. In theſe ſhells they ſometimes find pearls, that are purer and more valuable than thoſe taken out of the Oyſter-ſhells: but our right Pearl-muſcle is a third ſort, and is found with us only in rivers and freſh water. Theſe differ in ſhape from the Sea-muſcles, the ſhell being almoſt round, and flatter and broader than that of the common Muſcle. They reſemble them in colour, the outſide being black, and the inſide of a bright pearly blue. In moſt parts of Norway, particularly the weſt ſide, there are rivers and brooks where theſe ſort of Muſcles are found. The right of the pearl-fiſhery belongs to the king, and is carried on at his Majeſty's expence. In the dioceſe of Chriſtianſand there are the following pearl-rivers, which are reckoned the beſt in Norway. Oes-Skæl.

The river Gan,
river Nærims,
river Quaſſims,
} In the manor of Stavangers.

The river Lille, in Lyngdahl,
river Undals,
Roſſelands, a little rivulet; and
ſome other ſmall brooks.
} In the manor of Liſter and Mandal.

The river Berge, and
Baaſelands, a little brook,
} In the manor of Nedenæs.

The genuine pearls, which are annually taken about Midſummer in theſe waters, are the property of her majeſty the queen alone, as one of the regalia of the kingdom of Norway. There is a manager or intendant to preſide over the pearl-fiſhery: the perſon who is entruſted with this office at preſent, is the honourable M. Paul Baumann, who, at my requeſt, has been ſo obliging, as to communicate to me his obſervations on the Pearl-muſcle, and its properties: I ſhall inſert them in his own words, under the title of Some Obſervations concerning the Pearl-muſcles, their Nature and Properties. "The form and ſhape of theſe Muſcles are well known. As long as they are in the water the Fiſh is uſually almoſt out of the ſhell, much like a ſnail, dragging its houſe behind him: but notwithſtanding the ſhells are open while they continue in the water, yet they lie in ſuch a manner, that one

cannot perceive the Fiſh; for it hides itſelf, and part of the ſhell, in the ſand. If they are taken haſtily out of the water, the Fiſh may be ſeen out of the ſhell; but when he finds himſelf out of his element, he retires ſlowly into it again, and then cloſes it. They are taken up with the hands, or with a ſort of wooden pincers, and ſometimes one may take them up by putting a twig into the ſhell while it is open; upon which they immediately cloſe it, and hang ſo faſt to the twig, that they may be eaſily drawn out of the water. If they do not hit upon the opening at once, the ſhell cloſes as ſoon as it is touched; and conſequently this method then proves ineffectual. They cannot lie upon a hard or a rocky bottom, tho' they ſometimes try to fix themſelves in ſuch places: but if they are thrown alive upon a ſandy bottom, they will fix themſelves in leſs than 24 hours. The thick end of the ſhell is fixed in the ſand, and the other part appears above the ſurface of it; but when they are ſmall they are quite covered with the ſand. They often move themſelves, but ſo ſlow, that their motion is imperceptible, and can only be obſerved by a little track they leave behind them, like that of a ſnail. It is a vulgar error to imagine that they move themſelves to the ſurface of the water to breed pearls, by imbibing the dew; and it is as ridiculous to think, that the pearls are the ſemen with which theſe Muſcles propagate their ſpecies: if that were the caſe, then the greateſt number of pearls would be found where there are the greateſt number of Muſcles; but experience ſhows the contrary. Without doubt theſe Muſcles propagate their ſpecies like other Shell-fiſh, tho' I have not been able to diſcover the leaſt difference of ſex between them. About Midſummer one may perceive, within ſome of the ſhells, a ſort of clear ſemen, like the white of an egg, which in a few weeks appears like ſmall grains, or eggs; this ſeems to me to be their ſpawn. Our fiſhermen generally find the pearl in that part of the Fiſh which is called the beard in the Oyſter, and ſometimes on both ſides; but the pearls are always flat on that ſide that grows to the ſhell. From this we may conclude, that the ſubſtance of which pearls conſiſt, muſt have been fluid at firſt. As the pearls are frequently found growing to the ſhells, even thoſe of the right water*, as well as thoſe with a reddiſh caſt; and as thoſe pearls that are faſtened to the shell are uſually of the ſame colour with the shell, we may conclude, that the pearl and shell are one ſubſtance. Some are of opinion, that the Muſcle cannot produce the pearl of itſelf,

* The word water is here a term of art, and ſignifies the luſtre of the ſhell, as well as the pearl.

and

and that it is ſomething foreign to the Fiſh. The ſkin in which the pearl is encloſed, is ſo tranſparent on the ſide next the ſhell, that one may plainly ſee the luſtre and water of the pearl through it; but one cannot ſo well diſcover the quality through the other part of the ſkin, which is covered with a ſort of ſlime. The ſhells in which pearls are found, have generally ſome blemiſh in their ſhape, and differ from the reſt, being crooked, ſhort, &c. and the larger the pearl is, the more obvious always is the blemiſh. Notwithſtanding all this, one cannot, by the external appearance, declare for a certainty whether ſuch ſhells have pearls in them or not, and much leſs what water they are of; for the pearls may have been damaged by ſome accident, whilſt they were in their fluid ſtate. A Muſcle may have more than one pearl, and ſometimes all of them of a good water. The greateſt number of pearls are of a reddiſh brown; a good many are white or grey, ſome black, but the beſt, which are very ſcarce, are of a pure water, and excellent luſtre. When the Muſcles are found at the bottom of rivers that run with a pretty ſtrong current, the outſide of the ſhells are always of a yellowiſh brown; but on muddy ground, or in ſtagnated waters, the ſhell is generally black: however, one cannot ſay that the ground, or the colour of the ſhell, indicates the pearls to be larger or ſmaller, better or worſe, or fewer in number. The Muſcle may be open'd without deſtroying the Fiſh, which will live after the pearl is taken away; but it is obſerved, they never produce any more pearls." So far Mr. Baumann.

O. Wormius ſays, in his Muſeum, p. 110, that he has had ſome Norway pearls not inferior to the Oriental. I have indeed ſeen ſuch myſelf; but I muſt alſo obſerve, that the number of theſe is not very conſiderable *.

## SECT. IV.

The Snegle, Sea-ſnails, Cochlea, are called here Konunger, or Kukelurer. They are found on theſe coaſts of various ſorts, partly ſticking like Oyſters or Muſcles to the rocks, and partly lying among the weeds, and in ſandy bottoms. Snegle.

The ſhells that are found in Norway are not ſo large as thoſe that are brought from the Indies to ornament our grottoes. The largeſt I have found are about as big as a middle-ſiz'd pear, and they are partly of that ſhape; tho' ſome are round, and ſome

* We meet with Pearls in Norway, ſome of which are of a clear white, and ſhine like ſilver. Indeed we ſometimes find ſuch as, for their ſize and beautiful water, are not inferior to the Oriental. Fridr. Chriſtian Leſſers Teſtaceo-Theologie, P. II. L. i. c. 4. §. 314.

form'd

form'd like a cone. Theſe look as if they were turn'd. They are variegated with ſeveral colours, and many ſtreaks, lines, and circles. The ſhells of ſome are ſmooth, thoſe of others are covered with a white cretaceous ſubſtance; others ſhine like mother of pearl†: ſo that nature is hardly diverſified in ſuch a beautiful variety in any of its other productions, except it be in flowers. Hence we may admire the wiſdom and contrivance of the great Creator, and may ſay with truth, "Natura ludendo ſerio agit." I have procured drawings of as many different ſpecies as I have met with on theſe coaſts, and have repreſented them in the plate.

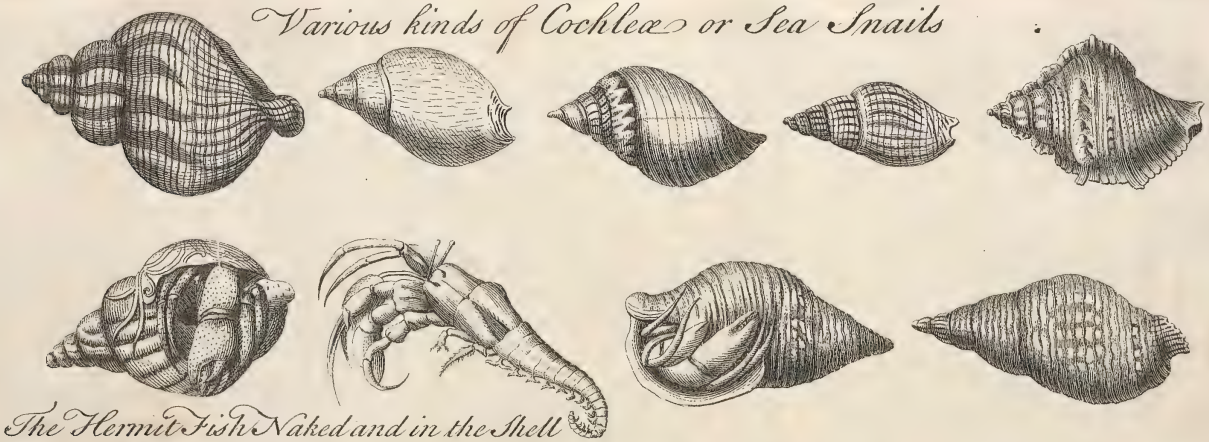
Bue-hummer. The Bue-hummer, a particular ſpecies of Shell-fiſh, which is found here in abundance, but ſeldom ſeen in Denmark, unleſs it be by accident, and is called the Hermit-fiſh. It has the name of Bue hummer becauſe the head and fore-part of the Fiſh are formed ſomething like a ſmall Craw-fiſh or Lobſter, with two large claws, four ſmall legs, and three long tentacula, which are as ſmall as a hair. The whole fore-part of the Fiſh, eyes, mouth, and all, is enveloped in a thin cruſtaceous covering, like that of a Lobſter; but the reſt of the body is incloſed in the ſhell, being ſoft and tender, and near two inches long. It much reſembles a Craw-fiſh, extracted out of the ſhell. The Hermits, or Buehummers, are incloſed in a ſhell of the Wilk-kind, one of the Conchæ Turbinatæ; and it is of various ſizes, from one to four inches in length. Rondeletius, Lib. xvii. cap. xii. mentions ſeveral ſorts of this ſtrange compoſiton of land and ſea-animals, which may be called the Craw-fiſh-ſnail, or the Snail-craw-fiſh: but among the various ſorts he deſcribes, none of them is perfectly like this Norway Bue-hummer. Geo. Marcgrave alſo deſcribes, in his Hiſt. Nat. Braſiliæ, Lib. iv. c. 21, ſuch an animal, by the name of Paranacare; which appears to be twice as big as our Norvegian Fiſh; for he ſays it is three fingers long, and that the body is covered with a few hairs, which we do not find on the Buehummer.

In a work called Nova Literaria Maris Baltici, Anno 1699, Menſe April. p. 118, there is an article inſerted by the learned Matth. Hen. Scachthios, then rector in Kiærtemynde, to this purpoſe: "Secundus eſt cancellus turbinem Norvegicum inhabitans: ad inſulam Promontorii Cartemundani Romſoam, inter haleces retibus irretitos, quatuor ejuſmodi cancellos ceperunt piſca-

† In his magna ludentis naturæ varietas, tot colorum differentiæ, tot figuræ, planis, concavis, longis, lunatis, in orbem circumactis, dimidio orbe cæſis, in dorſum elatis, lævibus, rugatis, denticulatis, ſtriatis, vertice muricatim intorto, marginem in mucronem emiſſo, foris effuſo, intus replicato: Jam diſtinctione virgulata, crinita, criſpa, cuniculatim, pectinatim, imbricatim undata, &c. C. Plinius, Lib. ix. cap. 33.

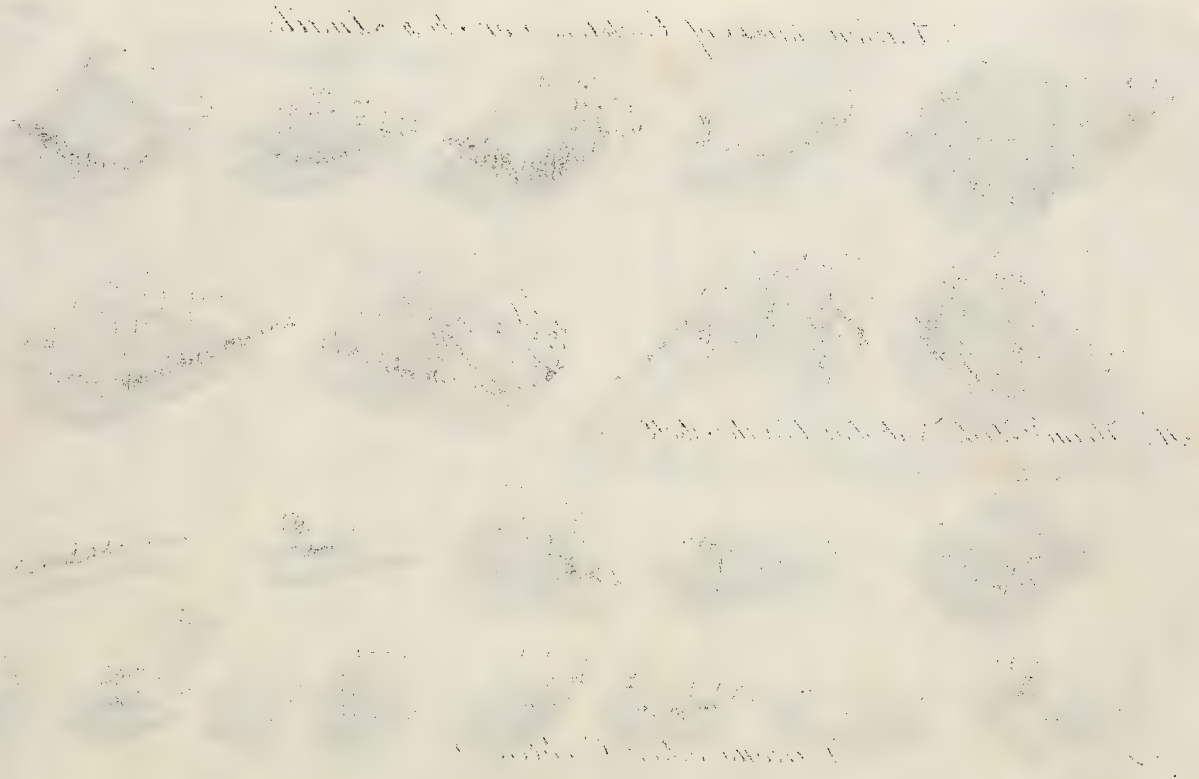
tores

Various kinds of Cochleæ or Sea Snails



The Hermit Fish Naked and in the Shell

24. Various other Cochleæ



tores noſtri, nec plures, nec pauciores. Mare Americanum id genus animalculorum copioſe frequentat, ut habet Carolus Rochefort in Hiſtoria Inſularum Americanarum, Antilles a Geographis vulgo appellatarum; ſed in hiſce Balticis fluctibus, nec poſt, nec ante id tempus, reperti ſunt Cancelli. Peculiaris Cancellorum eſt progenies, Americanis Cancellis admodum ſimilis, ut ovum ovo, niſi quod hic turbinem Norvagicum, ille nautili concham in hoſpitium & corporis ſui munimentum contra hoſtium inſidias eligat Cancellus. Totius animalculi præcipua pars anterior caput eſt, cum annexis pedibus & forcipulis. Hac parte corporis cancrum quodammodo refert, teſta rubeſcente munita: inferior autem pars, a capite ad caudam, tenuis eſt, imbecillis, nuda & mollis ad inſtar locuſtarum, teſta carens, ſed cuticula veſtita, quæ inſeritur conchæ, duobus tamen pedibus, in acutum deſinentibus, tanquam retinaculis exiſtit, quibus forſan corpus in teſta retinet, ne elabatur. Hiſtoriam Cancellorum ſatis accuratam deſcripſit Geſnerus, quem gnaviter ſecuti ſunt Aldrovandus, Johnſtonius & alii, ſed nullam apud eos inter variantes figuras delineationem invenimus, huic noſtro Cancello ſimillimam. Qua ratione in littus noſtrum jactati ſint hoſpites hi infrequentes, autumare nequimus, niſi forſan e Norvegia vel aliunde navium carinis huc venientium adhæſerint, eaſque ad Inſulam Romſoe, ubi frequens ad anchoras navium eſt ſtatio relinquerint: namque turbines Norvagici, quibus teguntur, in mari hoc Balthico non ante ſunt reperti, ſed e Norvegia ad nos transferuntur. Hoc modo in freto Helſingoram verſus, Cancer Moluccanus Anno 1633, captus eſt, & Muſeo Wormiano Hafniæ dicatus."

Theſe Hermits, or Craw-fiſh-ſnails, are ſaid to ſwim, or row themſelves along, by the help of their extended claws, pretty quick. It is obſerved that they often quit their ſhell, to ſwim the quicker; but they return again, in order to enter their former habitation; tho' in this they find themſelves ſometimes prevented by an envious neighbour of their own kind, who thinks it more convenient than his own; and when he has taken poſſeſſion, he defends himſelf in it, as if poſſeſſion gave him a right to it *.

The ſame power do theſe creatures alſo exerciſe over the Wilks, when they either want a new habitation, or when they are grown too big for their ſhells. "A conchis nudi naſcuntur, ſed purpuras ac turbines e ſuis pellunt conchis, iiſque veſcuntur, ut eorum occupent domicilia. Cum in amplitudinem majorem excre-

* Mich. Bernh. Valentini, in his Muſeum Muſeorum, Lib. iii. p. 503, perhaps on that account, gives them the name of Soldier-fiſh. He looks upon them to be a ſort of Sea-ſcorpions, and ſays that the Indians prepare an healing-oil from them, which is reckoned good for rheumatic and other pains in the joints.

verint, quam ut primis teſtis capi queant in teſtam ampliorem tanquam in domum novam migrant." Worm. Muſ. p. 250 *. I have ſometimes kept them alive a few days in water, to ſee how readily they go in and out. Ambroſe Paræus, Lib. xxv. p. 687, calls this little creature Bernard l' Eremite; but why I do not know, for he gives no account of the origin of that name.

## SECT. V.

Igelkier. The Igelkier, or Julkier, the Sea-urchin, called alſo Krake-Baller, perhaps becauſe the crow feaſts upon them when he finds them lying on the rocks at low-water. It is otherwiſe known by the name of Echinus Marinus, and Pomum Marinum, the Sea-apple, a name that repreſents the ſize and figure of the thin and tender ſhell that ſurrounds this Fiſh, which certainly is one of the ſtrangeſt animals contained in the ſea. They are ſeen here every day, and are very common on our coaſt. They differ pretty much in ſize, for ſome are found not bigger than a wallnut; others are equal to a large apple; and I have two in my cabinet as big as the head of a new-born infant. Their ſhape is likewiſe different, for ſome are like a cone, others are quite round, excepting the under part, which is pretty flat; and of this laſt ſort we have the greateſt number. The ſhell is covered with a vaſt number of ſmall ſharp prickles, like the briſtles of a hedge hog, whence its Latin name; but theſe prickles are not larger than a ſmall pin at the moſt. I have indeed ſeen a ſmall kind, that has had them as long again as the largeſt ſort. They probably ſhed the prickles once a year, and have new ones, which their fineneſs ſeems to require. When they are juſt taken out of the ſea they have a greeniſh luſtre, which is very beautiful; but their greateſt beauty appears when they are dry'd or boil'd, and the prickles are rubb'd off. This conſiſts in certain regular and proportionable ſtripes, interchanged among one another, of a cylindrical form, and running from the top to the bottom. Some of theſe are white, others of a dark red, others again of a light red, or orange colour. Theſe coloured ſtripes are again ſtrewed over with as many white little knobs as there were originally prickles.

I ſhall now deſcribe the internal part of this creature, which will be more difficult to conceive, without ſeeing it, than the external. When this beautiful ſhell is broken (which may eaſily be done by ſqueezing it a little) there is found in it a quantity

* Swammerdam aſſerts that the Bue-hummer never quits his ſhell; and in his Bible of Nature, Chap. xii. p. 64, that author treats all that is ſaid about it as a meer fable without any foundation.

of

of ſlime and water, and only a ſmall Fiſh of a black, or dark red colour; and from this little body there runs, into all the turnings and windings of the ſhell, a great number of fine threads; theſe ſeem compoſed of a thicker ſlime, or perhaps are a kind of guts: they have a communication with the external prickles; and between theſe uſually there is diſpoſed, in ſtripes, a great deal of yellowiſh ſpawn. The Fiſh lies in the ſhell ſtretched from the bottom to the top; and there is, in that part, a ſmall, and almoſt imperceptible opening, like the anus: through this the excrements paſs, which conſiſt of ſeveral ſmall black grains. The mouth, as I obſerved before, is on the flat ſide; it is extremely curious, and is formed of five bones, part convex, and part concave, all running to a ſmall point, where they join together like the bill of a bird, and look ſomething like a flower. Geſner, Lib. iv. de Aquatil. p. 416, deſcribes this creature pretty exactly, and ſays of the mouth in particular, that in the whole ocean there is nothing more curious, or more beautiful. "Tam mirabili ſtupendoque artificio ſunt conſtructa & cœlata, ut nihil ſit in toto mari elegantius, ſpectatuque jucundius."

The Sea-urchin is found on a ſandy bottom, and rolls himſelf about with his prickles wherever he pleaſes. When the tide happens to fall on a ſudden, they become a prey to the crow, and other birds. Gaſp. Schottus relates, in his Phyſica Curioſa, L. x. c. xv. that when they (probably by natural inſtinct given them, and all other creatures, by the wiſe Creator, for their preſervation) perceive ſtormy and bad weather coming on, they lay hold of a pebble to make themſelves heavy, and with that fix themſelves to the bottom of the ſea, which the ſailors look upon as a ſign of bad weather *. He alſo relates that the Sicilians, whoſe taſte muſt be very different from ours, reckon this creature to be delicate food; they break the ſhell, and eat the inſide raw with ſpoons. "Qui cochleari utuntur cum ovis & excrementa deglutiunt. Hos per jocum dicebam abſumere cum ovis actum parvum & magnum (i' atto piccolo e grande) dicere volebam urinam & ſtercora eorum †. How this ſhell (which, without doubt, is an excellent abſorbent) may be uſed to advantage in phyſic, is ſhown by Ol. Wormius, in Muſeo, p. 261.

* This was known in Pliny's time; for he ſays, "Tradunt, ſævitiam maris præſagire eos, correptiſque operari lapillis mobilitatem pondere ſtabilientes. Nolunt volutatione ſpinas atterere, quod ubi videre nautici, ſtatim pluribus ancoris navigia infrænant. H. Nat. Lib. ix. c. xxxi.

† Dr. Shaw, in his Voyage to the Levant, calls this creature a Sea-egg; and ſays, that it is only the roe that is fit to be eaten with pepper and vinegar, particularly at the time of the full moon. See T. i. p. 336.

We

We have alſo another, and coarſer ſpecies of the Echinus, very different from the former kinds; which I more particularly call Hericius, vel Erinaceus marinus, the Sea-Hedge-hog. Theſe are found on our coaſt, tho' but ſeldom; and I do not know that I have ever ſeen more than two of them, one of which is in my poſſeſſion. The body is round, about the ſize of an orange, and nearly of the ſame ſhape. The mouth and anus are placed at the top and the bottom, as in the other kind. From this I conclude, that the conſtruction of the internal parts likewiſe is ſimilar in both kinds; for I dare not open that in my poſſeſſion, becauſe it would utterly ſpoil it. The difference in the external parts is very great, for the prickles are for the moſt part near four inches long, and as thick as a gooſe-quill. They are quite hard and compact, except that there is a little marrow in them. At one end they ſtand irregularly, but at the other end they are regularly diſpoſed in ten rows, there being five prickles in each row: two or three of theſe rows ſtand cloſer together than the reſt, ſo that one cannot put a finger between; then there follows a ſpace twice as wide: and it has 50 prickles on the ſides, which are remarkably large. On the flat ſide underneath, and near the mouth, there are ſeveral ſmaller prickles; but I cannot juſtly ſay in what order they ſtand, becauſe moſt of them are broken off in the ſpecimen I preſerve. The round body, or ſhell itſelf, is not, like the common kind, ſmooth at the bottom, but is rather furr'd over; but this I cannot particularly deſcribe, as I have never ſeen them perfect, or freſh out of the water. Amongſt the foreign writers, whether ancient or modern, I cannot find the leaſt intimation of any thing that reſembles this ſpecies.

## SECT. VI.

I now come to thoſe ſea-animals which have a hard and thin ſhell, form'd like a veſtment, which yields to the motions of the body and limbs. Of this kind are Lobſters, Craw-fiſh, Crabs, and Shrimps.

Lobſter. The Lobſter is formed like a Craw-fiſh, but is five or ſix times as large; with eight ſmall, and two large claws or feet*. From Eaſter to Midſummer they are fat and plump, and fit for the

* Whether there may be amongſt Lobſters, as amongſt ſeveral other Fiſh, extraordinary large and giant-like individuals, I cannot aſcertain; but I am credibly informed, that at Udvær, in the pariſh of Evenvigs, there is often ſeen by the fiſhermen a kind of over-grown Lobſters, ſo large and frightful that they dare not attack them; and it is ſaid that there is a full fathom betwixt the tips of their claws, by which one may judge of their ſize, tho' they are never ſeen entirely; for they hide themſelves in the weeds and ruſhes, which all Lobſters are fond of.

table.

table. After that time they fall away, and they likewiſe caſt their ſhell. To ſupply the place of the old ſhell, a new one, that is thinner, is immediately prepared by nature, which, in leſs than eight days, acquires almoſt the ſame degree of hardneſs as the other. The male Lobſter is known by the tail, which is narrower than that of the female; and it ſeems as if it were pinched in. The female is broader, and is reckoned the moſt delicate. They keep on the ſandy bottom and in the gravel, or in the cracks of the rocks; but moſt frequently amongſt the weeds and ruſhes, from which they probably receive the greateſt nouriſhment. They eat alſo various ſorts of young Fiſh. The greateſt enemy the Lobſter has is the Sea-wolf, who likes every thing that is hard to exerciſe his teeth upon. When the Lobſter is purſued, and wants to get away in a hurry, they ſay he bends his tail, and by preſſing it, ſhoves himſelf along backwards; ſo that the head is dragged after the hind-part. Formerly they uſed to take Lobſters here with wooden pincers; but as they are hurt by being ſqueezed, and uſually die two or three days after, they no longer make uſe of that method. In thoſe places, from whence they export them alive in Lobſter-buſſes, they are caught only in what we call Teiner. This is a machine compoſed of ſeveral hoops covered with a fiſhing-net; at each end there is a long and narrow entrance, ſo that the Lobſter, when he is once in, cannot eaſily find his way out again. In ſome places they uſe teiner, like eel-baskets, made of the roots of juniper-trees, which they find the beſt for this purpoſe: in theſe they generally hang ſome other Fish for a bait, and in each teiner that is faſtened with a rope, and thrown into the water, they catch about ten or twelve in a night.

Method of catching them.

How many thouſands there are in the whole annually catch'd and exported may be judged by this; that from the beginning of the preſent century there have been in our ports every Spring, at leaſt 30 or 40 Lobſter-buſſes from London and Amſterdam; which are loaded with live Lobſters only. Theſe veſſels are contrived for the ſervice, every one being provided with a well, or cloſe room, with a great number of holes bored through the bottom, and big enough to hold 10 or 12000 Lobſters in the ſalt-water, their proper element. About the beginning of the Spring they make better voyages than they do in Summer, when the air begins to grow warm. If the voyage be prolonged by calms or contrary winds, the Lobſters, being too much confined, are apt to die; and this particularly happens if there comes thunder, which they ſay hurts them more than any thing. In this caſe

Numbers and Exportation.

the proprietor makes a bad voyage, and is a great loſer by it; for ſuch a cargo is valuable, and very profitable, when they arrive ſafe to thoſe populous cities, where they are ſold to a great advantage. A Lobſter in Norway is valued at no more than two ſkillings, or a penny ſterling: this is a fix'd price when a Lobſter is eight inches long, or above, which is the ſtandard authorized by the government; but if they be leſs, or want any of the claws *, they are ſold for one ſkilling. At this low rate they produce annually 10,000 rix-dollars in the dioceſe of Stavanger alone, ſince the public, within theſe twenty years, has encouraged this fiſhery, by providing buſſes, which export them from Stavanger, Egarſund, and other ports; but for the reaſons mentioned above they can make but one voyage, which muſt be in the Spring. The beſt places or harbours for Lobſters, in each of which three or four buſſes may be loaded every year, are Skudeſnæſs, Akre, Præſte-havn, Vaage or Akre i Buk von See, Stierne Oe, Hvidings Oe, Tanan and Tananger. Eaſtward of Lindeſnæſs there are caught and exported alſo a conſiderable number of Lobſters, but I have no particular account of the quantities.

That foreigners may not run away with the greateſt profit by an early voyage, it is eſtabliſhed, that in each of the before-ſaid harbours a Norway veſſel muſt be loaded, before they have permiſſion to ſell any to foreigners. In Sundhordlehn we have alſo, within theſe few years, carried on the Lobſter-fiſhery, and annually export them †. In ſome parts of Norway they pickle Lobſters with vinegar and ſpices. The peaſants in many places do not ſeem to like this ſort of Fiſh; and tho' Lobſters and Oyſters are to be had in ſuch plenty, and are reckoned a delicacy by ſome, they do not regard them.

## SECT. VII.

Craw-fiſh. Craw-fiſh are found in ſome of the rivers in the dioceſe of Aggerhuus, particularly at Friderickſtad; but in this part of the country they will not thrive. Of this a correſpondent of credit has aſſured me from his own experience. He has endeavoured to breed them in freſh water at his country-houſe, but to no pur-

* That the great number of Lobſters crowded together in one place ſhould not bite off one another's claws, which they are apt to do, they tye up the claws of every one of them with packthread.

† Mr. Danckertſon, receiver of the duties at Storoen, gives an account that, in this preſent year, from his fiſhery alone a quantity of Lobſters, to the amount of 6000 rix-dollars at prime coſt, have been exported. The inhabitants of Zirkſee in Holland firſt began this trade, and enriched themſelves ſurpriſingly by it. Now the Engliſh likewiſe carry on this fiſhery, and catch a great many Lobſters on the coaſt of Holland.

poſe.

poſe †. In Sundfiord we find a ſort of Craw-fiſh which I ſhould rather take to be young Lobſters, if they were not quite diſtinguiſhed by their particular form. I have, for this reaſon, exhibited a figure of one in the plate annexed. The two foremoſt claws are of an extraordinary, and ſeemingly unproportionable length; they are even longer than the whole body: they are ſlender, and of a pentagonal ſhape. The ſhell on the back and ſides is variegated with particular marks, like hieroglyphics. I have never ſeen but one of them, which is remarkably different from every thing I have met with of that claſs. Geſner repreſents, cap. xiv. p. 124, a particular Craw-fiſh, which he calls Leo Marinus, or the Sea Lion; for what reaſon I cannot ſay; the compariſon muſt ſeem too far fetch'd. This ſpecies however agrees pretty well with ours, in reſpect to the two long claws; but then the body is much ſhorter, and, according to his deſcription, it is furr'd, or covered with little prickles; neither has it any thing of thoſe characters or reſemblances of letters impreſſed upon it, which chiefly diſtinguiſhes that I have deſcribed from other kinds; ſo that I cannot look upon them to be the ſame *.

Crabs, Cancri Marini, are caught here in plenty, of which there are three ſorts, namely, the large Taſke-krabber, which is reddiſh on the back, and white under the belly. Theſe are found on a Crabs.

† Car. Linnæus ſays, in in his Fauna Suecica, p. 358, that Craw-fiſh were not ſeen in Sweden till the reign of King John III. who, amongſt other things, is celebrated for importing Craw-fiſh, and breeding them in his own country.

* Since I have wrote this account, I find that Ol. Wormius has taken notice of the ſame Norvegian Craw-fiſh or Lobſter, and has given it the name of the King of the Lobſters, and alſo the Letter-Lobſter. As he has not given a figure of it, I ſuppoſe it will be the more agreeable to find one here, which I have taken care to have very exact; and the more to illuſtrate the ſame, I ſhall quote a few words from that author on this ſubject: "Quem alii Aſtacum medium, ſeu mediæ magnitudinis, Norvegi Hummer-Konge, ſeu Regem Aſtacorum vocant (his name is not known here at preſent) nos non inepte Aſtacum Literatum, quod in cruſtis caudam tegentibus literarum quarundam grandium & quaſi hieroglyphicarum notas oſtentet—Meus Aſtacus Literatus longitudine eſt pedis unius. Chelæ ſeu forcipes, ubi extenſi recta linea, ſunt craſſitie paulo majore pollice, totius corporis lineamentis majori Aſtaco ſimilis, niſi quod chelæ in longitudinem protendantur & minores ſint. Dimidium enim pedem æquant & antequam findantur, quatuor in longum exporrectis dotantur prominentiis, alternatim duplici & ſimplici dentium ordine conſpicuis, inter quos ſinus ad ſummum excurrunt quatuor, eleganti ſpectaculo—In dorſi cruſtis notæ conſpiciuntur nigricantes (in my ſample it is a riſing in the ſhell itſelf, with no difference of colour, which is all over a kind of ſtraw-colour, intermixed with red here and there) quæ priſcas monachorum literas quodammodo referunt, utrinque ſex, quarum prima a cauda numeranda T, ſecunda & tertia E, quarta & quinta L, ſexta I, utcunque exprimunt ea figura, qua in vetuſtis manuſcriptis codicibus viſuntur. Hunc Aſtacum illum eſſe crederem, quem Rondeletius Aſtacum parvum vocat, niſi plebs forficibus carere diceret. Noſter enim quatuor primos forficibus dotatos obtinet pedes, ut Aſtacus major." Muſ. Wormian. p. 249. All that I can ſay further is, that the figures, letters, or hieroglyphic characters, repreſented by the force of imagination, are not the ſame in all, but a "Luſus naturæ elegans quidem ſed incertus."

ſandy

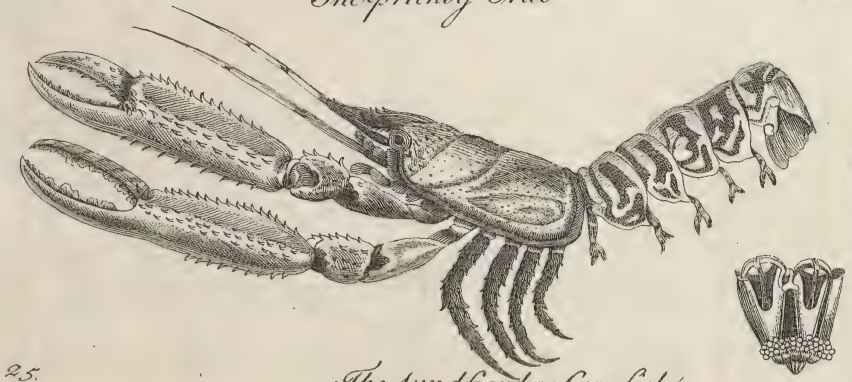
ſandy bottom, and are in ſeaſon from Michaelmas-day to Chriſtmas, but reckoned to be fatter during the increaſe, than they are at the decreaſe of the moon They are caught in a triner, in the ſame manner as the Lobſters are, and are reckoned by ſome as well taſted, eſpecially when they have a good deal of ſpawn. The female Crab has a broader tail than the male, to cover the private parts, and both ſexes have double genitals, according to Anderſon's Obſervation, in his Deſcription of Iceland, p 175. I have before obſerved this particular of Gul-haaen. I have alſo mentioned the Crabs artifice in throwing a ſtone between the ſhells of the Oyſter when open, ſo that it cannot ſhut; and by that means ſeizing it as a prey. On the other hand, the Crab is conquered by the Eel, which twines itſelf about that creature's claws, and by ſqueezing itſelf together, breaks them off, and ſucks them with great eagerneſs. Pliny tells us, Lib ix. c. 31. that Crabs fight with one another as the rams do, by butting againſt each other with the ſmall ſharp horn they have on their heads: but that they ſhould be at a certain time transformed into Scorpions, is not at all probable. "Sole cancri ſignum tranſeunte & ipſorum cum exanimati ſint corpus transfigurari in ſcorpiones narrantur in ſicco."

Garnater. The Garnater, or Duck-crab, is a ſmaller ſort of Crab, with a grey ſhell. Theſe keep near the ſhore, ſo that one may take them up with one's hands; but they are only uſed for baits. Theſe, as well as ſeveral other kinds of Crabs, and ſuch ſlow crawling ſpecies, ſeem to be ordained by the wiſe and good Creator, as food for the whole tribe of Flat-fiſh, which alſo are ſlow in their motion, and uſually live on the ſandy bottom, and live chiefly on thoſe crawling kinds.

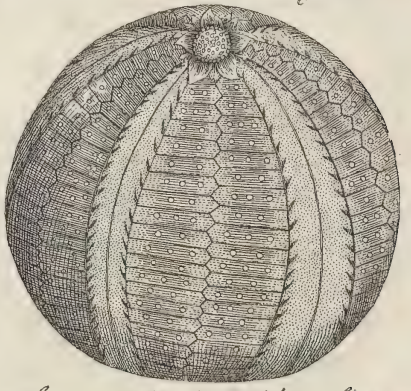
Fanſe, or Trold-krabber. The Fanſe, or Trold-krabber, the Prickly Crab. Our fiſhermen give it the latter name, Trold-krabber, becauſe it is not fit to eat. It is alſo called by ſome the Sea-ſpider, probably on account of its long legs, which, on ſome that I have in my poſſeſſion, are a foot long; though the body is not much bigger than a Duck Crab, only a little thicker. The fore-part in this kind is oval, and there is a pretty long horn growing from the forehead, which is divided at the end into two points. The body, as well as the long legs of this Crab, is covered with prickles. On this account Olig. Jac. in Muſæo Reg. p. 112, calls this ſort Cancer Spinoſus. Matth. Hen. Schactius ſays, that the Trold-krabber (though he does not call it by any particular name, for the names were entirely unknown to him, but by the deſcription he muſt mean this kind of Crab) by changing its colour, prognoſticates a ſudden change of weather. "Rarum certe eſt naturæ

The prickly Crab

a Small Sea Urchin with y^e Spines



The Sundfiord or Crawfish



a large Sea Urchin without y^e Spines

turæ ſpectaculum, in quo hoc peculiare deprehendimus ſæpius, quod cum ſtatus cœli pluvius, & madidæ ventorum procellæ ingruant, ex omni tum parte nigreſcat teſta tanquam pice obducta, ſerenitate autem cœli inſtante, in rubedinem, & quidem miniatam, dilutam vergat. Quoties itaque hanc teſtam colores mutare videmus, toties aeris temperamenti mutationem vaticinari audemus, ut faſti tam certi non ſint, in dubio cœli ſtatu indicando, quam dictum in hac teſta indicium." Nova Litterar. Mar. Balthici Anno 1699, Menſ. April. p. 118. This author's obſervation does not agree with mine; for on ſeveral which I have by me the red is quite unchangeable. Juſt after theſe were taken, being hung out of a window in the ſun, a ſort of black unctuous matter, almoſt like pitch, flowed from them. I ſuppoſe Mr. Schachtius had obſerved this fluid diſtill from them in the ſame manner, and probably a change of weather might enſue by accident; which made him draw too haſty a concluſion: for when the creature is quite dry it prognoſticates a change of weather no longer.

Ræger, the Shrimp, Squilla Marina, called by ſome Hopper, becauſe of its quick and leaping motion, may be look'd upon as a Sea Craw-fiſh in miniature, and are very well known in Denmark: they are found on the Eaſtern coaſt, particularly in Chriſtiania-fiord; and, like the Salmon, they generally keep about thoſe places where the rivers diſembogue themſelves into the ſea. Shrimps.

## SECT. VIII.

After the cruſtaceous tribe I come to the ſpecies of the exſanguineous inhabitants of the ocean, which are ſoft, and have no ſhell or covering. I ſhall firſt treat of the Spoite, Blekſprutte, the Sepia, or Ink-fiſh, called alſo by ſome the Sea-gnat. Some authors call it by the name of Sepia, or Loligo. It is one of the moſt extraordinary creatures in the ocean for ſhape, and is not eaſily deſcribed without the aſſiſtance of a drawing; nor can any one form a perfect idea of it, without ſeeing the animal itſelf; for it aſſumes various forms by the motions of its ſkin and arms. The length of that which I keep preſerved in ſpirits of wine is about nine inches, or a little more, and it is near two fingers thick; ſo that probably it was but a young one, for authors ſay they are generally much larger; and I have lately procured a dry'd one, which is two feet long; the body is almoſt round, and reſembles a ſmall bag, and is blunt at both ends *: but the head is the Blekſprutte.



* I have ſeen ſome that are almoſt pointed at one end, and have no tail. In the General

moſt remarkable part. This has two large eyes, and a mouth like a bird's beak; above which there ſtand eight long arms, or horns, like a ſtar, and each horn is octangular, and cover'd with a number of ſmall round balls, which are ſomething larger than a pin's head. There are at the back part of the head two of theſe horns, twice as long as the reſt, and broader towards the end. On each ſide of the body there are two ſkinny membranes, with which the animal covers itſelf all over, being firſt rolled together; and it is ſaid that it can raiſe itſelf above the ſurface of the water, and leap pretty high, making uſe of theſe membranes like wings.

From this deſcription we may conclude, that nature produces but few animals of ſo extraordinary a ſtructure in the ſeveral parts. The interior conſtruction of this creature is not leſs wonderful: when it is opened there is found hardly any fleſh within the ſkin; there runs a long and flat bone the whole length of the back, in ſhape almoſt like the blade of a knife. This bone is known at the apothecaries by the name of Os Sepiæ, as has been mentioned before in the article of Whales; that Fiſh being greatly plagu'd by this little creature. The fore-part of the body or ſkinny bag, above-mentioned, is quite filled with a black fluid, which being ſeen through the ſkin, makes the Fiſh appear of a blue colour, though the fluid is of a fine black, and may ſerve for ink to write with. When they are in danger theſe creatures diſcharge this black fluid. Hence they are called Spute, or Spoite, which makes the water all round them appear black and muddy; and thus the creature makes his eſcape, by rendering itſelf, as it were by magic, inviſible to his purſuers.

This is a wonderful gift of nature, for the preſervation of a creature otherwiſe quite unarmed and helpleſs *. If any of this black fluid happens to drop upon one's hand, it burns like a cauſtic; and this ſenſation doubtleſs would be more violent, if it was to get into the eyes. The ſame liquor is very good to dip a bait in for a fiſhing-hook, and the whole Fiſh is excellent for that purpoſe, which is the only uſe that is generally made of it. Concerning this Fiſh's method of breeding, a very creditable correſpondent has given me a ſurpriſing account, that is agreeable to its other properties. This gentleman, and many more wit-

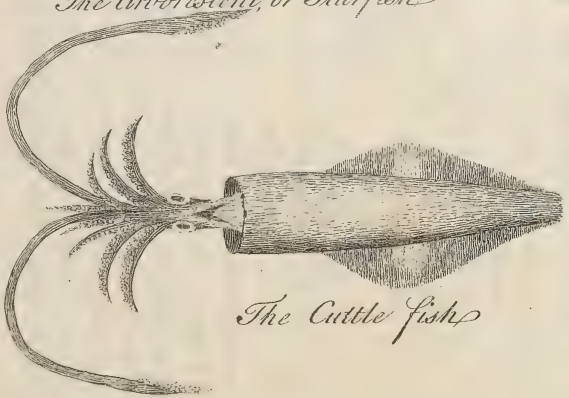
General Collection of Voyages and Travels, as alſo in the London Magazine for March, 1750, p. 120, there is a print of this Fiſh, by the name of the Ancornet, or Scuttle-fiſh, where the tail, under the ſharp pointed end, ſpreads itſelf wide on both ſides, and forms a ſort of a creſcent.

* Contra metum & vim ſuis ſe armis quæque defendit. Cornibus Tauri, Apri dentibus, morſu Leones. Aliæ fuga ſe, aliæ occultatione tutantur. Attramenti effuſione Sepiæ, torpore Torpedines, &c. Cicero de Nat. Deor. Lib. ii. c. 50.

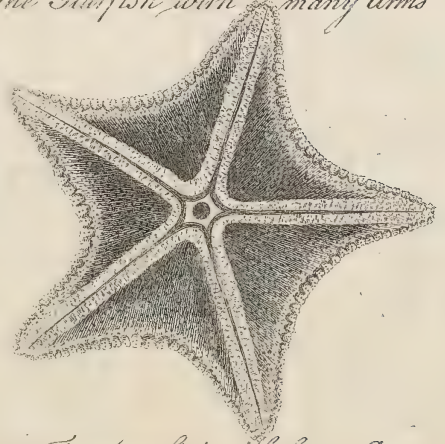
neſſes,

The Arborescent, or Starfish.

The Starfish with many Arms.



The Cuttle fish.



The Starfish with fewer Arms.

neſſes, have obſerved a hundred, or even a thouſand young ones, crowded together in the uterus of the female, without any motion; till at laſt they eat their way through, upon which the parent dies. Theſe, if females, only ſurvive till they are devoured in their turn, by their own offspring. Pliny, who makes ſome difference betwixt the Sepia and the Loligo, which I do not underſtand, writes of them thus: "Loligo volitat extra aquam ſe efferens, quod & pectunculi faciunt, ſagittæ modo. Sepiarum generis mares varii, & nigriores, conſtantiæque majoris. Percuſſæ tridente fœminæ auxiliantur, at icto mare fœmina fugit. Ambo autem ubi ſenſere ſe apprehendi, effuſo attramento, quod pro ſanguine his eſt, infuſcata aqua abſconduntur."

In the laſt century our peaſants looked upon this Cuttle-fiſh to be a dangerous and ominous creature: they called it an amazing ſea-prodigy, when they catched one near Katvig in Holland, in the year 1661. See Olear. Gottorff. Muſæum, p. 42, where that author might reaſonably be ſurprized that a Fiſh well known to the ancients ſhould ſeem ſo great a prodigy.

The Kors-fisk, or Kors-trold, the Stella Marina, Star-fiſh, or Sea-ſtar, is an extraordinary kind of Fiſh, divided into many ſpecies; of which I ſhall (as I have done through this whole work) only deſcribe thoſe that are found on our coaſts: amongſt theſe are ſome which I cannot recollect to have ſeen any where elſe. This creature in general conſiſts of a round body, about two inches in diameter, and without a head *. From this central part there extends on all ſides, according to the kinds, five or more, even to ten points or legs, like the rays of a ſtar. Theſe are hardly four inches long, and are of the ſame ſubſtance with the body, which is neither fleſh, bone, nor cartilage. This ſubſtance being neither hard nor tough, but rather brittle, is eaſily broken, juſt like a bit of bread: there is however a certain ſort of them that is rather tougher, and will bend without breaking. They are generally covered with a fleſh-coloured or yellowiſh skin; they are furr'd underneath, ſomewhat in the manner of velvet ſhag, that is uſed for lining cloaths. In the center of this ſtar there is an aperture, and under it a hollow place, not ſo big as a ſixpenny piece. In this place it is to be ſuppoſed both the mouth and the anus are ſituated †. From this aperture there are con- Star-fiſh.

* A particular ſort are found here, their bodies not ſo big as a ſixpenny-piece, quite black, and with five legs or branches, as ſmall towards the body as at the extremities, which in other Star-fiſh are much thicker towards the center.

† Monſ. Baker a fait quelques experiences ſur les Polypes ſechés. Il a cru y avoir découvert l'anus, mais les obſervations de Monſ. Trembley & ce que nous en avons vû

continued ſeveral longiſh ſlits or hollows, like ſo many cracks, furr'd all over. Theſe are covered with ſeveral regular rows of little round protuberances; and upon each of theſe, in ſome ſorts, there is another ſmall protuberance; ſo that what is called Luſus Naturæ by ſome, is the mark of a quite different ſpecies. They keep on the ſandy bottom, or elſe on the ſides of the rocks, where they crawl about, and ſerve for food to many other ſorts of Fiſh, as alſo to the ſea-gulls, and other birds of that kind. It is ſaid they have ſtrength to cruſh a Muſcle to pieces, but their rays often in the attempt happen to get in between the ſhells, and are nipped off; ſo that ſometimes, as the proverb ſays, the biter is bitten.

Sea-ſun. As theſe are called Sea-ſtars, we have alſo here a ſcarcer ſort, of which I have three ſpecimens by me, under the name of the Soe-ſoele, or Sea-ſun; but it is not called ſo by the Norvegians *, but by the Hollanders, who have frequently found it in the Weſt Indies, and there given it the denomination of Zee-ſonne, or Sea-ſun, according to George Marcgrave's account, in his Hiſt. Nat. Braſiliæ, Lib. iv. cap. xxii. "Zoophyton aliud hic reperitur (Stella arboreſcens Rondeletio & Geſnero) nautes vulgo een See-ſonne. Ex centro, quod æquabat groſſum Miſnicum & cavum erat, ac in ſui medio quinquangulare habebat foramen inſtar ſtellæ, tenuiſſimis quaſi denticulis donatum. Quinque rami craſſi prodibant, qui deinde, inſtar arboris, in multos alios ramos minores diſpergebantur varie inter ſe inflexos, omnes rotundi & quaſi coralliformes, ita ut orbem facerent. Materia fragilis inſtar ſtellæ."

This deſcription repreſents pretty exactly the moſt ſurprizing and leaſt known European Star-fiſh, or Kors-trold. It differs from all the reſt in this, namely, that the legs terminate like branches, with ſmall twigs, and thoſe twigs again divide into the fineſt fibres imaginable. Each of theſe is curl'd up, and all are full of ſmall inciſions croſs each fibre. This looks very curious, when every one of them is obſerved ſingly; but when all the curls are ſeen intwined together in a confuſed manner, they put one in mind of the poet's deſcription of Meduſa's head, every hair of which, according to the fable, Minerva transformed into a ſnake, for polluting her temple by her laſcivious intercourſe with Neptune,

vû nous mêmes, ne nous permettent pas de l'en croire. Le Polype rend les ſuperfluités de ſes alimens par la bouche même, par laquelle ils ſont entrés. Biblioth. Raiſonnée, T. xxxvii. p. 267.

* The proper Norvegian name I could not learn for a great while, but at laſt I find it is Soe-navle.

the

the god of the ſea †. This ſtrange and wonderful Star-fiſh, or Kors-trold, is ſaid to be only the young, or perhaps only a grain of the roe of that great and frightful ſea-monſter, which is call'd here Kraake, and which ſhall be deſcribed in the following chapter. But as far as I could get information from ſeveral fiſhermen, who all agree in their accounts, this cannot poſſibly be true. I chooſe rather, from its connection with Neptune, and the reſemblance it bears to the head on Minerva's ſhield, to give it the name of Caput Meduſæ, or Meduſa's head.

The Manæte, the Sea-nettle, Urtica Marina, which we call Soe-nelde, is a ſofter ſort of thoſe creatures, which we call here by the common name, Trold, or Sea-trold. Its ſhape is round, almoſt like a ſmall plate, convex above, and underneath flat, or rather a little concave. It is throughout ſoft, ſmooth, and tranſparent, and ſeems a kind of ſlime, or jelly, though it adheres together pretty firmly, and is mark'd with a croſs, ſomewhat like a flower-de-luce, in the middle. Theſe creatures are blue white or red; ſome of them have many branches underneath. Theſe are uſually ſomething larger than the common ſort, and of a dark red. The Manæten abounds with a corroſive poiſon; and if it drops upon the hands, or any part of the body that is naked, it cauſes a ſmart and an inflammation, like that raiſed by nettles. Hence it has the aforeſaid name, Soe-nelde, i. e. Sea-nettle *. However, it is no vegetable, but is evidently a living animal; for it has ſenſation, and grows, moves, ſwims, and contracts and extends itſelf. It often picks up ſmall Fiſh or worms, which it devours, and is again devoured in its turn by other Fiſh. Pliny looks upon it as ſomething between an animal and a vegetable; but it certainly belongs to the former claſs. "Equidem, et his ineſſe ſenſum arbitror, quæ nec animalium nec fruticum ſed tertiam ex utroque naturam habent, urticis dico & ſpongiis. Urticæ noctu vagantur, noctuque mutantur, carnoſæ frondis his natura, & carne veſcuntur. Vis pruritu mordax, eademque quæ terreſtris urticæ." Hiſt. Nat. Lib. ix. cap. xlv. Sea-nettle,

Kircher, who calls the Manæten Pulmo Marinus, that is, Sea-lungs, deſcribes it as a poiſonous creature; and ſays, the exhalations from their dead carcaſes are very pernicious to the lungs. As a confirmation of this he ſays, that in the province of Narbonne a great number of people annually die of conſumptions,

† In Happelij Relat. Curioſ. T. iv. P. ii. p. 444, there is to be ſeen a drawing of this Stella Aboreſcens, but not ſo compleat and perfect as that which I have had drawn from ſeveral ſpecimens, all perfect.

* The uſual Norvegian name is, without doubt, of the ſame etymology; for Manæte ſignifies Mar-nettel, Hav-nælde, which is Sea-nettle.

which he imagines proceed from the great numbers of Manæten that are found in the ſalt-water lake, called Mortaigne. See his Mund. Subterran. P. ii. p. 129. A friend of mine has obſerv'd, that when theſe Manæten lie dead, and putrify upon the ſhore, they have cauſed a violent ſneezing in thoſe who paſs'd by: and he ſays, he knew a country lad that had like to have been blinded, and actually had his face much inflamed, by his father's throwing one of the red ſort at him inadvertently, when he was in a paſſion. They are reckoned moſt pernicious if they happen to touch the eyes; and I am informed that the peaſants in ſome places prepare a kind of poiſon from them, to kill vermin, and attempt to deſtroy the wolf with it. Some mix it with clay or mortar, and ſtop crevices in places where there are bugs; and they ſay it effectually deſtroys them, eſpecially if the Manæte be catch'd in the dog-days, for then its poiſon is moſt efficacious.

Perle-baand. The Perle-baand, that is, the String of Pearls, called alſo here the Sildæ Ræg, and Torske Ræg, is compoſed of ſeveral ſmall balls, like peas, hanging together. Theſe are ſeen ſwimming about the ſea like a row of pearls on a ſtring. They are compos'd of a ſoft ſlimy matter, like the Sea-nettle, or Manæte, and are probably of the ſame nature *. They are indeed tranſparent, like ſo many chryſtal beads, with a little mixture of red. This Perle-baand is always a welcome gueſt to the fiſhermen; for if they ſee many of them in the Autumn, or towards Chriſtmas, they are ſuppoſed to prognoſticate great plenty of Herrings and Cod in the ſucceeding ſeaſon.

* Nous avons comparé plus d'une fois les animaux avec les plantes. Monſ. Charles Bonnet a ſaiſi cette idée avant nous. Il a perfectionné la brillante penſée d'une échelle des eſtres que Monſ. Valiſnieri avoit ébauchée. Tout ſe ſuit dans la nature. Elle a ſçu lier les eſpeces ſans les confondre. L'homme eſt le chef de la création terreſtre, les quadrupedes, les oiſeaux, les inſectes s'en eloignment peu à peu, les Zoophytes finiſſent le ſyſteme des animaux, & les plantes ſenſitives vont commencer celuy des vegetaux. Les Lithopytes terminent celui-cy & les joignent aux metaux d'une figure determinée. La terre finit encore ce regne, & les elemens ramenent ſucceſſivement la création à l'Æther & à des matieres ſubtiles, analogues peut être aux corps des intelligences ſuperieures. Bibliotheque Raiſonnée, Tom. xxxvi. p. 192.

CHAP-

# CHAPTER VIII.

## Concerning certain Sea-monſters, or ſtrange and uncommon Sea-animals.

SECT. I. *Some of the inhabitants of the ocean are difficult to be known with any degree of certainty; and we muſt ſet ſome reaſonable bounds to our opinions concerning them.* SECT. II. *Of the Hav-Strambe and Maryge, or Mer-man and Mer-maid; the accounts of which are often, but not always, fabulous.* SECT. III. *Their exiſtence is poſſible, and even probable.* SECT. IV. *They exiſt in fact, which is undeniably proved, both by the evidence of our Norvegians and foreigners: a deſcription of theſe Sea-animals.* SECT. V. *More teſtimonies, and further deſcriptions of them.* SECT. VI. *The great Sea-ſnake, or Serpent of the ocean, ſeen on the coaſt of Norway, is not fabulous.* SECT. VII. *The deſcription of it.* SECT. VIII. *The danger of approaching near to it.* SECT. IX. *Whether this creature may be looked upon as the great Leviathan.* SECT. X. *Concerning great Snakes in other countries.* SECT. XI. *Of the Kraken, Krabben or Horven, the largeſt of all animals.* SECT. XII. *Their deſcription, according to the teſtimony of many eye-witneſſes.* SECT. XIII. *Principally confirms the truth of their exiſtence, and explains ſeveral obſcure phœnomena.*

## SECT. I.

IN the three preceding chapters I have treated of Fiſhes, and other animals found in the Norvegian ſeas, ſo far as I have been able to trace their hiſtory, by an extenſive correſpondence, and by frequently converſing with ſeveral curious obſervers of the works of nature; excluſive of the diſcoveries that I have myſelf been able to make on ſeveral occaſions. I have been enabled to purſue this work with ſome accuracy, by the many ſpecimens of different Sea-animals, freſh, dry'd, or preſerved in ſpirits, which have come to my hands. Tho' the number of theſe ſpecimens be very great, exceeding 100 different ſpecies, yet, perhaps, they are but a very ſmall part of the inhabitants of the ocean *: ſo

* Animalium omnium in aquis viventium nomina eſſe cxliv. vult Iſidorus. At Hieronymus cliii. atque id ab iis affirmari, qui ſcripſerunt ἁλιευτικά, in quibus eſt Oppianus Cilix, &c. Sed nullum legi hactenus, qui in hunc præcisè numerum inciderit præter Oppianum. Plinius recenſuerat clxxvi. ſpecies animalium in mari viventium, & Plinii catalogum in immenſum auxerunt, qui de hoc argumento noſtra ætate ſcripſerunt, &c. Addo quod idem Oppianus addit, in mari multa latere.

—— — —— Τά χὲν οὔτις ἀείδελα μυθήσαιο θνητὸς ἐιόν

Quin ſi Mahumeti credimus apud Damirem, in capite de locuſtis, Deus creavit mille ſpecies animantium, è quibus in mari ſexcentæ ſunt, & quadringentæ in terra. Et Pſeudo-

ſo that we may join with the Royal Pſalmiſt in that pious exclamation, "O Lord, how manifold are thy works! in wiſdom haſt thou made them all: the earth is full of thy riches. So is this great and wide SEA, wherein are things creeping innumerable, both ſmall and great beaſts." Pſalm civ. v. 24, 25. Not only the incomprehenſible numbers, but the variety alſo much exceeds, by what we can judge, the ſpecies of Land-animals.

Difficulty to know them all.

The element in which theſe laſt breathe, namely, the air, does not allow them to be long concealed, or unknown to mankind; ſo that, ſuppoſe them ever ſo ſcarce, they muſt ſome time or other be ſeen by men; and, conſequently, in ſome meaſure be known. But who is there that lives with the finny tribe, in the deep receſſes of the ocean? or, who has opportunity to obſerve them accurately and familiarly, in that unſtable and boiſterous element? 'Tis true, great numbers of different kinds of Fiſhes, which the beneficent Creator, with a more than paternal care, has ordained for food to mankind, in obedience to his command viſit us as welcome gueſts, or reſort to our coaſts, at certain ſeaſons of the year, as if it were to offer us their ſervice. Beſides theſe ſpecies that are ſerviceable to man, there are others deemed uſeleſs or hurtful, tho' created, doubtleſs, for ſome wiſe purpoſe: theſe exhibit to our view their enormous ſize, or uncouth forms; and fall a victim to man, by unwarily running into ſnares, ſpread for others of the ſcaly tribe of a more beneficial kind. Our fiſhermen throw a great many of theſe uncommon ſorts over-board directly, looking upon them not only as uſeleſs, but ominous; and call them by the general name of Trold-fisk, i. e. Unlucky-fish*. This proceeds, as has been before obſerved, from a ſuperſtitious

Pſeudo-Propheta liberaliores Talmudici, ſolum mundorum piſcium ſpecies ſeptingentas eſſe ſtatuunt, in quibus nulla eſſet hyperbole, ſi pro mundis piſcibus aquatilia in genere dixiſſent. Geſnerus enim aquatilium animantium nomina & icones pluſquam ſeptingentas exhibet. Nobis hic indicaſſe ſufficit ſumma genera. Sam. Bocharti Hierozoicon, Lib. i. c. vi. p. 37.

* Anno 1744 one Dagfind Korſbeck catched, in the pariſh of Sundelvems on Sundmoer, a monſtrous Fiſh, which many people ſaw at his houſe. It's head was almoſt like the head of a cat; it had four paws, no tail, and about the body was a hard ſhell, like a Lobſter's: it purred like a cat, and when they put a ſtick to it, it would ſnap at it. The peaſants look'd upon it as a Trold, or ominous Fiſh, and were afraid to keep it; and, conſequently, a few hours after they threw it into the ſea again. According to the deſcription, this might be called a Sea-Armadilla, by which name an American Land-animal is known, nearly of the ſame ſhape, excepting that it has a long tail. A fiſherman at Sundſland, two miles from Bergen, told me he had once ſeen a much more ſurprizing Sea-monſter cloſe to his boat; having juſt taken a view of the fiſhing-boat, it dived under the water immediately. This was not unlike a Sea-calf as to the fore-part, and had furred ſkin. The body was as broad and big as a veſſel of 50 laſts burthen; and the tail, which ſeemed to be about ſix fathoms long, was quite ſmall, and pointed at the end. There is a report, but not altogether

ſtitious notion, very diſadvantageous to the ſtudy of nature: for the fiſhermen are perſuaded, that if they preſerve them, they ſhall meet with ill ſucceſs in their fiſheries, or ſome other misfortune. However, from the few that accidentally come to our hands, tho' not ſufficient for our purpoſe, the learned may form ſome idea of the reſt. Was it poſſible for our ſight to penetrate through the thick medium of water, as we can through the air, we ſhould ſee wonderful objects, according to the accounts given us by the divers, who are employed in recovering wrecked goods. Theſe men, if one may believe them, ſee ſtrange forms in the deep receſſes of the ſea, which hardly any other eyes have beheld. Were it poſſible that the ſea could be drained of its waters, and emptied by ſome extraordinary accident, what incredible numbers, what infinite variety of uncommon and amazing Sea-monſters would exhibit themſelves to our view, which are now entirely unknown! Such a ſight would at once determine the truth of many hypotheſes concerning Sea-animals, whoſe exiſtence is diſputed, and looked upon as chimerical. I will allow they may be uncertain, becauſe we have but few opportunities to determine this point, by ſuch ſure evidence as would leave no room for doubt; but at the ſame time this is certain, that as on the one ſide we ought not to be too credulous, and believe the idle tales and improbable ſtories that every fiſherman or ſailor relates, either upon the credit of one of his companions, or from what he has ſeen himſelf, when embelliſhed with a great many additions and variations, concerning ſtrange and frightful ſea-monſters: yet I am of opinion, that the other extreme deviates as far from the truth, namely, when we will not believe things ſtrange and uncommon, tho', according to the unchangeable law of nature, poſſible; becauſe we cannot have ſo evident and clear a demonſtration of it as we might: by this way of arguing, all hiſtoric faith would be deſtroyed. One might as well doubt whether there are Hottentots*; for tho' the number of witneſſes be much greater in that caſe, ſtill that does not alter the nature of the knowledge; it only raiſes it to a higher degree of certainty. I premiſe this as undeniable, not without cauſe; for

We are apt to believe ſometimes too much, and ſometimes too little.

gether to be depended upon, that ſome peaſants at Sundmoer have catched a Snake lately in a net, which was three fathoms long, and had four legs: this muſt ſomewhat reſemble a Crocodile. The peaſants ran away frightened, and left the Snake to do the ſame.

* S'il ne faut ajouter foi qu'aux choſes qu'on a vues, il n'y aura rien de certain dans l'Hiſtoire. Les Tribunaux de judicature ne pourront plus prononcer ſur la dépoſition des témoins, & c'en eſt fait de tout commerce dans les pays où l'on n'a pas été, & avec des perſonnes qu'on ne connoit point. Une telle propoſition, ſi elle etoit reçu, bouleverſeroit la Societé. Bibliotheque Britannique, T. xxii. p. 271.

I have propoſed in this chapter, as a farther diſplay of the Creator's wiſdom, power and glorious œconomy, to give ſome account of the Sea-monſters that are found in the ocean, along the coaſt of Norway. Theſe, tho' they appear not every day, yet are ſeen often enough for our purpoſe: for there are many witneſſes of credit and reputation, who have ſeen them; even hundreds might be produced for each inſtance, if it ſhould be required.

There are many things belonging to the Natural Hiſtory of Norway, which are common in other places, tho', perhaps, ſcarce with us; ſo here alſo are many things common, and well known in this country, which, in other places, may poſſibly be doubted. Theſe conſiderations were the great motives that encouraged me to undertake this troubleſome, and, in many reſpects, difficult work.

## SECT. II.

Hav-Mand, Mer-man.

Amongſt the many Sea-monſters which are in the North ſea, and are often ſeen, I ſhall give the firſt place to the Hav-Manden, or Mer-man, whoſe mate is called Hav-Fruen, or Mer-maid.

* The exiſtence of this creature is queſtioned by many, nor is it at all to be wondered at; becauſe moſt of the accounts we have had of it, are mixed with meer fables, and may be looked upon as idle tales. Such is the ſtory of a Mer-man, taken by the fiſhermen at Hordeland, near Bergen; which, they ſay, ſung an unmuſical ſong to king Hiorlief. J. Ram. See Hiſtory of Norway, p. 24. Such alſo is the account given by Reſenius, Relat. in vita Frederici II. anno 1577, of a Mer-maid, that called herſelf Isbrandt, and held ſeveral converſations with a peaſant at Samſoe; in which ſhe foretold the birth of Chriſtian IV. and made the peaſant preach repentance to the courtiers, who were very much given to drunkenneſs. According to A. Buſſæus, (in his book cited in Theatr. Europ. T. I. anno 1619) the two ſenators, Ulf Roſenſparre and Chriſtian Holch, on their return from Norway, in their voyage caught ſuch a Mer-man; but 'tis added, they were obliged to let him go into the water again; for whilſt

Fable of a Mer-man.

* The old Norvegians called the male Hafstrambe, and the female Maryge, according to Andrew Buſſæus, in his Scriptum Monographum, printed in Ol. Bang's Uſeful and Inſtructive Miſcellanies, III. St. p. 531, relying upon an old MS. called Speculum Regale, extracted by Peter Clauſen Undal, of which I have given ſome account, in the preface to the firſt part of this work; but I did not know that the ſame extract was extant in a copy Buſſæus muſt have had, and much leſs that the work itſelf at large is ſtill to be ſeen amongſt Arnæ Magnai MSS. at the univerſity-library in Copenhagen, of which I have lately (with pleaſure and ſupriſe) been adviſed by a letter from the honourable B. Lyndorph, counſellor of ſtate.

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he lay upon the deck, he ſpoke Daniſh to them, and threatned, if they did not give him his liberty, that the ſhip ſhould be caſt away, and every ſoul of the crew ſhould periſh. This is as idle as the other ſtories. When ſuch fictions are mixed with the hiſtory of the Mer-man, and when that creature is repreſented as a prophet and an orator; when they give the Mer-maid a melodious voice, and tell us that ſhe is a fine ſinger; one need not wonder that ſo few people of ſenſe will give credit to ſuch abſurdities; or that they even doubt the exiſtence of ſuch a creature.

## SECT. III.

The truth.

However, while we have no ground to believe all theſe fables, yet, as to the exiſtence of the creature, we may ſafely give our aſſent to it; provided that it is not improbable, or impoſſible in the nature of things, and that there is no want of confirmation from creditable witneſſes, and ſuch as are not to be rejected. Both theſe propoſitions I ſhall ſhew to be well grounded. But before I proceed, I will venture to deſcribe our Norvegian Mer-man and Mer-maid, as likewiſe their young, called Marmæte, or Marmæle. If we judge of this affair (a priori) and enquire whether it be probable, that we ſhould find in the ocean a Fiſh, or creature, which reſembles the human ſpecies more than any other, it cannot be denied but we may anſwer in the affirmative, from the analogy and reſemblance that is obſerved betwixt various ſpecies of land and ſea-animals. It is well known there are Sea-horſes, Sea-cows, Sea-wolves, Sea-hogs, Sea-dogs, &c.* which bear a near reſemblance to the land-animals of thoſe ſpecies: tho' this ſhould be allowed as reaſonable, yet ſome may make an objection, founded upon ſelf-love, and reſpect to our own ſpecies, which is honoured with the image of God, who made man lord of all creatures; conſequently we may ſuppoſe he is entituled to ſuch a noble and heavenly form, which other creatures muſt not partake of; according to the words of the poet.

Pronaque cum ſpectent animalia cætera terram,
Os homini ſublime dedit, cœlumque tueri,
Juſſit — — — — — —

But the force of this argument vaniſhes, when we conſider the form of Apes, and eſpecially of the great Baboons of Africa †, and

* Vera eſt vulgi opinio, quicquid naſcatur in parte naturæ ulla, & in mari eſſe, præterque multa, quæ nuſquam alibi. Rerum quidem non ſolum animalium ſimulacra, &c. Plinius, Lib. ix. c. ii. This is confirmed by our fiſhermen, from their own experience, who know nothing of Pliny's authority.

† Si vera fatebor, quà hiſtoricus naturalis, ex ſcientiæ principiis nullum characterem hactenus

and much more when we conſider another African creature, called Quoyas Morrov, of which Odoard Dapper, in his Deſcription of Africa, p. 583, gives the following account.

" In the woods of the kingdom of Angola, or Dongo, we find an animal called Quoyas Morrov, that is, the Wood-man; it is alſo met with in Quoya, and in Bromo: it greatly reſembles man, and hence it is believed by many, that it has been produced from the intercourſe between a man and an ape, or an ape and a woman. A creature of this ſort was ſome years ago brought to Holland, and preſented to Frederic Henry, prince of Orange. It was as tall as a child of three years old, and as corpulent as one of ſix: it was ſtrongly built; ſmooth before, but rough, and overgrown with black hairs behind. The countenance of this animal reſembled that of a man; the noſe was flat, the ears like human ears; it had two protuberant breaſts, a navel, and all its limbs like thoſe of the human ſpecies; as elbows, hands, legs, calves of the legs, and ancles. It frequently walked erect, and could take up a heavy weight, and bear it away. When it wanted drink, it fixed one hand to the bottom of a tankard, and with the other took hold of the lid, and drank, wiping its lips afterwards. It laid its head regularly upon a pillow, when inclined to ſleep, and covered itſelf carefully with the bed-cloaths; ſo that any perſon would have ſwore that a man was ſleeping in the place. It is reported, that theſe animals attack and raviſh women, and that they ſometimes fall upon armed men. Upon the whole, this animal appears to be the Satyr of the ancients."

## SECT. IV.

If we will not allow our Norvegian Hasſtromber the honourable name of Mer-man, we may very well call it the Sea-ape, or the Sea-Quoyas Morrov, eſpecially as the author already quoted preſently after ſays, in p. 584, " That in the Sea of Angola Mermaids are frequently catch'd, which reſemble the human ſpecies. They are taken in nets, and kill'd by the negroes, and are heard to ſhriek and cry like women. The inhabitants on that coaſt eat their fleſh, being very fond of it, which they ſay is much like pork in taſte. The ribs of theſe animals are reckoned a good ſtyptic; and a certain bone in the head, which ſeparates the brain,

Meer-Minne.

haſtenus eruere potui, unde homo a ſimia internoſcatur. Dantur enim alicubi terrarum ſimiæ, minus quam homo piloſæ, erecto corpore, binis æque ac ille pedibus incedentes, & pedum & manuum miniſterio, humanam referentes ſpeciem, prorſus ut eoſdem pro hominum quopiam genere venditarint peregrinatorum rudiores. Loquela quidem, &c. — — verum hæc quædam eſt potentia, vel certe effectus, non nota characteriſtica. Carol. Linnæus in Præfat. Faunæ Suecicæ, p. 2.

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is ſaid to be a powerful remedy againſt the ſtone." I ſhall add to all this, a paſſage relating to this ſubject, which may be met with under the article Meer-mann, p. 658, in the Univerſal Dictionary of Arts and Sciences, publiſhed by John Theodore Jablonſky: "Meer-man, Meer-weib, Meer-minne, that is, Sea-man, Mermaid, or Siren, called by the Indians Ambiſiangulo, otherwiſe Peſiengoni, and by the Portugueſe Pezz Muger, is a Fiſh found in the ſeas, and in ſome rivers in the Southern parts of Africa and India, and in the Philipine and Molucca Iſlands, Braſil, North America, and Europe, in the North Sea. The length of this Fiſh is eight ſpans, its head is oval, and the face reſembles that of a man. It has an high forehead, little eyes, a flat noſe, and large mouth, but has no chin or ears. It has two arms, which are ſhort, but without joints or elbows, with hands or paws, to each of which there are four long fingers, (which are not very flexible) connected to each other by a membrane, like that of the foot of a gooſe. Their ſex is diſtinguiſhable by the parts of generation. The females have breaſts to ſuckle their offſpring; ſo that the upper part of their body reſembles that of the human ſpecies, and the lower part that of a Fiſh. Their ſkin is of a browniſh grey colour, and their inteſtines are like thoſe of a hog. Their fleſh is as fat as pork, particularly the upper parts of their bodies; and this is a favourite diſh with the Indians, broiled upon a Gridiron. It makes a lamentable cry when drawn out of the water. There is a bone in the head that divides the brain, which the Portugueſe powder, and ſay is of great ſervice in the ſtone and gravel. Accounts of the catching of theſe Sea or Mer-men in Europe are delivered by Wormius, Guiccardino, Mexia, Seybold, Eraſmus, Franciſcus, and others."

Athanaſius Kircher gives this deſcription of the Pezz-muger, in his third book de Magnete, P. vi. c. i. §. 6, p. 675. "Capitur certis temporibus anni in mari orientali Indiæ, ad inſulas Viſſayas, quas inſulas Pictorum vocant, ſub Hiſpannorum dominio piſcis quidam ἀνθρωπομορφος, i. e. humana prorſus figura, quem ideo Pezze Muger vocant, ab indigenis Duyor. Caput habet rotundum nulla colli intercapedine trunci compactum, extremæ aurium fibræ, quæ & auriculæ nominantur, ex cartilaginea carne eleganter veſtitæ, quarum interior pars, ampliſſimis formata anfractibus, veram hominis refert aurem, oculos ſuis ornatos palpebris, ſituque & colore non piſcis ſed hominis judicares. Naſo nonnihil oberrat, malam inter utramque non uſquequaque eminet, ſed levi tramite bipartitur, ſub eo vero labra magnitudine ſpecieque noſtris ſimillima, dentium, non quales inſunt piſcium generi ſerratilium, ſed planorum & candidiſſimorum, continua ſeries. Pectus alba cute con-

contectum, hinc atque hinc paulo latius quam pro corpore, in mammas extuberans, neque eas ut fœminis pendulas, ſed quales virginibus globoſas, plenas lactis candidiſſimi. Brachia non longa ſed lata ad natandum apta, nullis tamen ipſa cubitis, ulnis, manibus articuliſque diſtincta. In adminiſtris ſobolis procreandæ membris in utroque ſexu nulla ab humanis diſtinctio. Poſt hæc in piſcem cauda deſinit."

## SECT. V.

Confirmed. Upon theſe authorities I may ſay, that if the exiſtence of the European Mer-men be called in queſtion, it muſt proceed entirely from the fabulous ſtories uſually mix'd with the truth *. Here, in the dioceſe of Bergen, as well as in the manor of Nordland, are ſeveral hundreds of perſons of credit and reputation, who affirm, with the ſtrongeſt aſſurances, that they have ſeen this kind of creature ſometimes at a diſtance, and at other times quite cloſe to their boats, ſtanding upright, and formed like a human creature down to the middle; the reſt they could not ſee. I have ſpoken with many of theſe people, all eye-witneſſes to the exiſtence of the creature; and I have taken all poſſible precautions in examining them ſtrictly on the ſubject. The reſult was, that I found them all agree in every particular of their accounts, which anſwers to a deſcription lately publiſhed by Jablonsky and Kircher, ſo far as they could judge by the ſight of them only, at a ſmall diſtance. But of thoſe who had ſeen them out of the water, and handled them, I have not been able to find more than one perſon of credit who could vouch it for truth. As I may ſafely give credit to this perſon, namely, the reverend Mr. Peter Angel, who is ſtill living, and miniſter of the pariſh of Vand-Elvens Gield, on Sundmoer, I ſhall relate what he aſſured me of laſt year, when I was on my viſitation-journey. He ſays, that in the year 1719, he (being then about 20 years old) along with ſeveral other inhabitants of Alſtahoug in Nordland, ſaw what is called a Mer-man, lying dead on a point of land near the ſea, which had been caſt aſhore by the waves, along with ſeveral Sea-calves, and other dead Fiſh. The length of this creature was much greater than what has been mentioned of any before, namely, above three fathoms. It was of a dark grey colour all over: in the lower part it was like a Fiſh, and had a tail like that of a Porpeſſe. The face reſembled that of a man, with a mouth, forehead, eyes, &c. The noſe was flat, and, as it were, preſſed

* In Everh. Happelius's Mundus Mirabilis are to be read many ſtories, mixed with fables, concerning the Mer-man, Tom. iii. Lib. i. cap. 18.

down

down to the face, in which the noſtrils have ever been very viſible. The breaſt was not far from the head; the arms ſeem'd to hang to the ſide, to which they were joined by a thin ſkin or membrane. The hands were, to appearance, like the paws of a Sea-calf. The back of this creature was very fat, and a great part of it was cut off, which, with the liver, yielded a large quantity of train-oil. That this creature, which is reckoned among the Whale-kind, is a Fiſh of prey, and lives upon the ſmaller ſort, may be concluded from what Mr. Luke Debes relates, in his Deſcription of Faroe. He tells us, that they have there ſeen a Mer-maid with a Fiſh, which ſhe held in her hand. The words are, in p. 171, as follows: "There was ſeen in 1670, at Faroe, Weſtward of Qualboe Eide, by many of the inhabitants, as alſo by others from different parts of Suderoe, a Mer-maid, cloſe to the ſhore. She ſtood there two hours and a half, and was up to the navel in water. She had long hairs on her head, which hung down to the ſurface of the water all round about her. She held a Fiſh, with the head downwards, in her right-hand. I was told alſo, that in the ſame year the fiſhermen in Weſterman-haven, on Stromoe, had, at their fiſhery north of Faroe, ſeen a Mer-maid."

Tormodus Torfæus relates, that ſeveral Mer-men, along with other monſters, were ſeen at one time on the coaſt of Iceland, in his Hiſt. Norv. T. iv. L. viii. p. 416, and there refers to his Account of Greenland. I am ſorry that I have not the work at hand, for thoſe that would be curious to know more of this matter; but in the place juſt quoted he ſpeaks thus: "Sirenes propter auſtralia Iſlandiæ promontoria, Sudrnes appellata, pluraque alia monſtra viſa, & in his illud, quod Hafſtrambe appellatur (de quo videri poteſt Gronlandia noſtra cap. xiii.) nautis, qui in Iſlandiam vento retroacti ſunt, obſervatum."

That theſe creatures, being Fiſh of prey, ſometimes quarrel with the Sea-calf, is confirmed by a relation ſent me, with ſeveral others, by the rev. Mr. Hans Strom, at Borgen. It runs to this effect: "It happened at Neroe in Numedalen, that there was found a Mer-man and a Sea-calf on a rock, both dead, and all over bloody; from which it is conjectured that they had killed one another."

The rev. Mr. Randulf, rector of the place, gave himſelf ſome trouble, by endeavouring to preſerve the Mer-man, but to no purpoſe; for before he or his people could get near it, the peaſants had cut them both to pieces, for the ſake of the fat. Whether amongſt theſe Mer-men, or, as we may rather call them, Sea-apes, there be any ſpecifick difference in ſhape or ſize (as I have obſerved before

before that the real apes differ from the creature called Quoyas-Morrow, though there is in all a ſimilitude of the human form) I cannot ſay for a certainty. However, I am apt to think there is, and not without ſome probability. In regard to ſize at leaſt, they remarkably differ every where, according to our fiſhermen, from the well-known ſea-animal called Marmale, or Marmæte: This ſhall be deſcribed hereafter, and might ſeem to be a dwarf in this ſpecies. That mentioned above, in the paſſage quoted from Mr. Angel, being three fathoms long, might, in the ſame manner, be called a giant among the reſt.

In the year 1624 a Mer-man, thirty-ſix feet long, was taken in the Adriatic Sea; according to Henry Seebald's Breviar Hiſtor. to this the laſt-mentioned was but a dwarf. See p. 535. As to their form, it is ſaid that ſome have a ſkin over their head like a monk's hood, which perhaps ſerves them for the ſame purpoſes as does the ſkinny hood, which a certain ſort of Sea-calves have on their heads, which, from thence, are called Klap-mutzer, as has been obſerved in the deſcription of that creature. Olaus Magnus ſpeaks, in Lib xxi. cap. 1, of ſeveral monſters in the North Sea, all which reſemble the human kind, with a monk's hood on the head. His words are, "Cucullati hominis forma." He adds, that if any of this company be catch'd, a number of them ſet up a howl, put themſelves in violent agitations, and oblige the fiſhermen to ſet the priſoner at liberty. But this laſt article is a meer romance, to which this too credulous author in this, as well as ſome other particulars, has given too much credit, without ſufficient grounds. Of this Mer-man with a hood Rondeletius writes thus, in Geſner. de Aquatilibus, Lib. iv. which I ought not to omit. "Inter marina monſtra eſt & illud, quod noſtra ætate in Norvegia captum eſt, mari procelloſo. Id quotquot viderunt ſtatim Monachi nomen impoſuerunt. Humana facie eſſe videbatur, ſed ruſtica & agreſti, capite raſo & lævi. Humeros contegebat veluti Monachorum noſtrorum cucullus. Pinnas duas longas pro brachiis habebat. Pars infima in caudam longam deſinebat. Media multo erat latior, ſagi militaris figurâ. Hanc effigiem mihi dono dedit illuſtriſſima Margareta Navarræ regina, &c. Ea a viro nobili effigiem hanc acceperat, qui ſimilem ad Carolum V. imperatorem, in Hiſpania tunc agentem, deferebat. Illæ reginæ affirmavit, ſe monſtrum hoc in Norvegia captum vidiſſe, poſt graviſſimas tempeſtates undis & fluctibus in littus ejectum, locumque deſignabat, die Zundt juxta oppidum den Ellepoch. Ejuſdem monſtri picturam mihi oſtendit Giſbertus medicus ex eadem Norvegia Romam ad ſe miſſam, quæ pictura nonnihil a mea differebat.

ferebat. Quare, ut dicam quod ſentio, quædam præter rei veritatem a pictoribus addita eſſe puto, ut res mirabilior haberetur *, crediderim igitur monſtrum hoc humanam formam ea modo referre, quo pars capitis ranarum, quia poſt caput partes erant utrinque elatæ hominum omoplatis reſpondentes; muſculiſque movebantur, qui cuculli Monachorum figuram repræſentant, qualis in nobis ſpectatur. Secundus muſculus omoplatas movens, ſcilicet eas partim ad ſe attrahens, partim attollens, cuculli Monachorum forma aptiſſime referens. Ad hæc, non ſquamis ſed cute dura rugoſa veluti cortice contectum putarim, quemadmodum de Leone marino dicemus."

As this account confounds Norway with the Sound, and Malmoe, which the Dutch call the Elbow, I conclude this ſtrange Fiſh here ſpoken of to have been juſt the ſame with that which Arild Hvitfeld in vita Chriſt. iii, ad anno 1550, ſpeaks of. He ſays it was caught in Oreſund, and brought to Copenhagen, and there buried by his majeſty's order, becauſe the head reſembled that of a human creature, with cropped hair, and covered with a monk's hood. There is yet a difference obſerved in this Merman or Mer-maid's lower parts, and the tail. Theſe are repreſented, in moſt of the drawings, with fins, like other Fiſh, and with a flat and divided tail, ſomething like that of the Porpeſſes; from this that print of a Sirene, which Thom. Barthol. gives us in Hiſtoriar. Anatomicar. centur. II. N° ix. p. 188. differs entirely, for the lower extremity is there repreſented with a round protuberance, without the leaſt ſign of a fin, or any thing like the tail of a Fiſh.

The anatomy of a Mer-maid's hand, which the ſaid author repreſents, and which he had in his poſſeſſion, together with a rib of this creature, are, without doubt, the ſame that Ol. Jacobæus, in his Muſ. Reg. p. 15. takes notice of, and where he does not queſtion the exiſtence of this creature, any more than the former writer. Bartholine, in the before-mentioned place, quotes the teſtimony of ſeveral foreign writers, and concludes the ſubject in p. 191. with theſe words: "Tanta de Sirenum forma apud antiquos recentioreſque differentia eſt, ut mirum non ſit, pro fig-

* This writer has the greateſt reaſon to ſuſpect the painter of impoſition, for painting it in that manner. Ambroſius Paræus, Lib. xxv. cap. 34. and alſo Gaſp. Schott. Lib iii. cap. 3. betrays a good deal of affectation in comparing this animal with a prieſt in his ſacerdotal habit, or to a Jewiſh high-prieſt in his pontificals. In the General Collection of Voyages and Travels, Tom. vii. ſect. 4. p. 226, this creature is repreſented among the animals of the ocean that are caught at the Cape of Good-Hope. It is figured there like a common Sirene, or Mer-maid, with only this difference, that on the arms there are ſeveral fins.

mentis haberi quibuſdam. Nos oculatas manus habemus, Sireneſque tales demonſtramus, quales revera viſæ. Nec manus aut coſtæ fallunt, quarum icones dedimus ad ipſam naturæ veritatem confectas."

Lateſt inſtances.

The lateſt inſtance I have learned of a Mer-man's being ſeen, was in Denmark; and this ſtands atteſted ſo well, that it deſerves to be quoted after all the others. I ſhall give it as it is found in Ol. Bang's collections, p. 528. and is as follows: Anno 1723, on the 20th of September, the burger-maſter, A. Buſſæus, of Elſeneur, had, by his majeſty's orders, three ferrymen, inhabitants of Elſeneur, examined before the privy-councellor Frid. von Gram. Their names were Peter Gunnerſen, aged 38, Nicholas Jenſen, aged 31, his brother, and Jeppe Jenſon Giſſen, aged 29. Theſe men were examined about a Sea-monſter, which they affirmed they had ſeen a few weeks before, and concerning which their depoſitions were taken upon their reſpective oaths, in order to corroborate their teſtimony.

It appeared, that about two months before, the aforeſaid ferrymen were towing a ſhip juſt arrived from the Baltic, and which was then under full ſail, when they were at a conſiderable diſtance from land, being in the midway between Hveen and Sædland, where they could ſee the church-ſteeples of Landſcrone. The calm weather induced them to lie by a little, and at the diſtance of an Engliſh mile, or a quarter of a Norway mile, they obſerved ſomething floating on the water like a dead body, which made them row to it, that they might ſee what it was. When they came within ſeven or eight fathoms, it ſtill appeared as at firſt, for it had not ſtirred, but at that inſtant it ſunk, and came up again almoſt immediately in the ſame place. Upon this, out of fear, they lay ſtill, and then let the boat float, that they might the better examine the monſter, which, by the help of the current, came nearer and nearer to them. He turned his face, and ſtared at the men, which gave them a good opportunity of examining him narrowly; he ſtood in the ſame place for half a quarter of an hour, and was ſeen above the water down to his breaſt: at laſt they grew apprehenſive of ſome danger, and began to retire; upon which the monſter blew up his cheeks, and made a kind of a roaring noiſe, and then dived under the water, ſo that they did not ſee him any more.

In regard to his form and ſhape, they ſay he appeared to them like an old man, ſtrong limb'd, and with broad ſhoulders, but his arms they could not ſee. His head was ſmall in proportion to the body, and had ſhort-curled black hair, which did not

not reach below his ears; his eyes lay deep in his head, and he had a meager and pinched face, with a black beard, that looked as if it had been cut. His skin was coarſe, and very full of hair. Peter Gunnerſen related, (what the others did not obſerve) that this Mer-man was, about the body and downwards, quite pointed like a Fiſh. This ſame Peter Gunnerſen likewiſe depoſed, that about twenty years before, as he was in a boat near Kulleor, (the place where he was born) he ſaw a Mer-maid with long hair, and large breaſts. Theſe ferrymen further depoſed, that the weather was very fine and quite calm during the ſame day, and for ſeveral days following.

That this examination was taken in the moſt regular and exact manner, atteſts, Elſeneur, ut ſupra,

Andrew Buſſæus.

Whilſt I am writing this, the reverend Mr. Hans Strom informs me, that in Bergenſund on Sundmoer, there has alſo this Summer been ſeen a Mer-man of the common form: however, in all theſe accounts probably fancy has exaggerated a little.

The before-mentioned Marmæle, or, as ſome call it, Marmæte, belongs alſo to this claſs of the Mer-maid: tho' I ſhall not call it the Mer-man's offſpring, yet one might give it this name till further examined into. This creature is often caught on hooks, and is well known to moſt of the fiſhermen. They are of different ſizes; ſome are of the bigneſs of an infant of half a year old; others of one of a year; and others again as big as a child of three years old: of this laſt ſize there was one lately taken in Selloe-Sogn; the upper part was like a child, but the reſt like a Fiſh: thoſe who caught it threw it directly into the ſea. Sometimes the peaſants take them home to their houſes, and, as they ſay, give them milk, which they drink. They tell us that theſe creatures then roll their eyes about ſtrangely, as if it was out of curioſity, or ſurpriſe, to ſee what they had not ſeen before. Thoſe that venture to take them home, do it in hopes of having ſomething foretold by them; but they do not keep them above 24 hours, ſuperſtitiouſly thinking themſelves bound to row out to ſea, and put them down in the ſame place where they found them. Marmæte.

## SECT. VI.

The Soe Ormen, the Sea-Snake, Serpens Marinus Magnus, called by ſome in this country the Aaale-Tuſt, is a wonderful and terrible Sea-monſter, which extremely deſerves to be taken notice of The great Sea-Snake, or Serpent of the ocean.

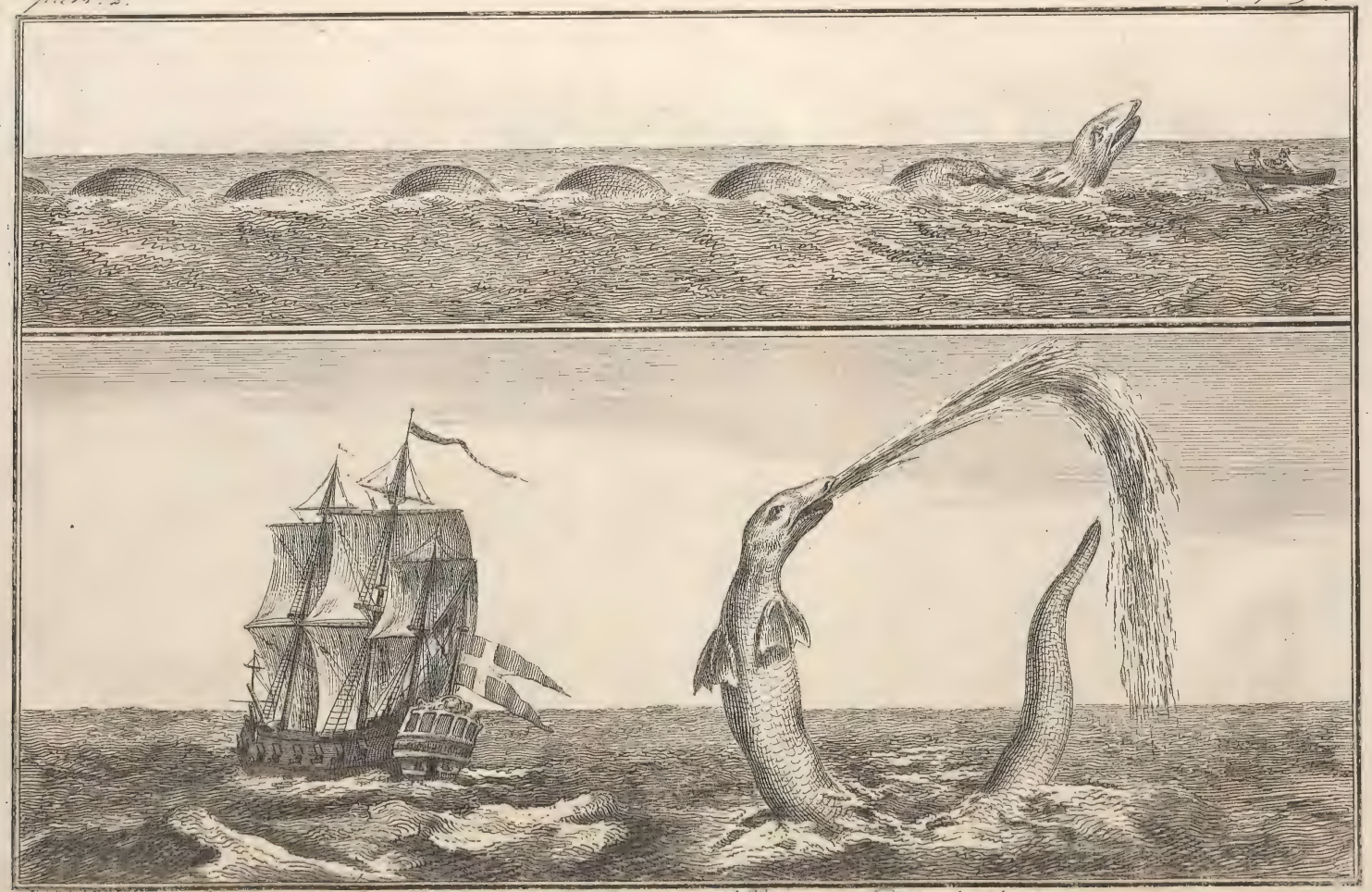
of by thoſe who are curious to look into the extraordinary works of the great creator. Amonſt theſe the Kraaken, which I am going to deſcribe, is to be conſidered as the moſt extraordinary in length. But here I muſt again, as I did of the Mer-man, firſt give the reader proper authorities for the real exiſtence of this creature, before I come to treat of its nature and properties. This creature, particularly in the North Sea, continually keeps himſelf in the bottom of the ſea, excepting in the months of July and Auguſt, which is their ſpawning time; and then they come to the ſurface in calm weather, but plunge into the water again, ſo ſoon as the wind raiſes the leaſt wave.

If it were not for this regulation, thus ordained by the wiſe Creator for the ſafety of mankind, the reality of this Snake's exiſtence would be leſs queſtioned, than it is at preſent, even here in Norway; tho' our coaſt is the only place in Europe viſited by this terrible creature. This makes many perſons, that are enemies to credulity, entertain ſo much the greater doubt about it. I have queſtioned its exiſtence myſelf, till that ſuſpicion was removed by full and ſufficient evidence from creditable and experienced fiſhermen, and ſailors, in Norway; of which there are hundreds, who can teſtify that they have annually ſeen them. All theſe perſons agree very well in the general deſcription; and others, who acknowledge that they only know it by report, or by what their neighbours have told them, ſtill relate the ſame particulars.

Many witneſſes not to be rejected.

In all my enquiry about theſe affairs, I have hardly ſpoke with any intelligent perſon, born in the manor of Nordland, who was not able to give a pertinent anſwer, and ſtrong aſſurances of the exiſtence of this Fiſh: and ſome of our North traders, that come here every year with their merchandize, think it a very ſtrange queſtion, when they are ſeriouſly aſked, whether there be any ſuch creature; they think it as ridiculous as if the queſtion was put to them, whether there be ſuch Fiſh as Eel or Cod.

Laſt Winter I fell by chance in converſation on this ſubject with captain Lawrence de Ferry, now commander in this place, who ſaid that he had doubted a great while, whether there was any ſuch creature, till he had an opportunity of being fully convinced, by ocular demonſtration, in the year 1746. Though I had nothing material to object, ſtill he was pleaſed, as a farther confirmation of what he advanced, to bring before the magiſtrates, at a late ſeſſions in the city of Bergen, two ſea-faring men, who were with him in the boat when he ſhot one of theſe monſters,



27. The great Sea Serpent, according to different Descriptions

ſters, and ſaw the Snake, as well as the blood that diſcoloured the water. What the ſaid men depoſed upon oath in court, may be ſeen by the following inſtrument: the original was ſent me, and I think it deſerves to be printed at large. It runs thus:

" His majeſty's chief advocate in Bergen, Albert Chriſtian Daſs, the recorder, Hans Chriſtian Gartner, John Clies, Oliver Simenſen, Oliver Brinchmand, George Konig for Conrad de Lange, Matthias Gram for Elias Peter Tuckſen, Claus Natler for Didrick Haſlop, Jochum Fogh for Henry Hiort, and George Wiers for Hans Chriſtian Byſſing, ſworn-burghers and jury-men, give evidence, that in the year of our Lord 1751, on the twenty-ſecond day of February, at a ſeſſions of juſtice in this city of Bergen, the procurator John Reutz appeared, and preſented a letter which had been delivered to him that day, from the honourable Lawrence de Ferry, captain in the navy, and firſt pilot, dated the preceding day, February 21, wherein he deſires the ſaid procurator to procure him written copies of the reſpective depoſitions, atteſted properly upon oath, relating to the before-mentioned affair, and what there happened: and the ſaid procurator, now preſent, for that purpoſe, humbly begs, that two men, namely, Nicholas Peterſen Kopper, and Nicholas Nicholſon Anglewigen, inhabitants of this city, may be admitted to make oath, that every particular ſet forth in the aforeſaid letter is true; which depoſition he deſires may be entered in the act of that ſeſſions. This letter was accordingly read to the ſaid deponents; and is as follows: Teſtimony given at the ſeſſions.

Mr. John Reutz,

The latter end of Auguſt, in the year 1746, as I was on a voyage, in my return from Trundhiem, in a very calm and hot day, having a mind to put in at Molde, it happened, that when we were arrived with my veſſel within ſix Engliſh miles of the aforeſaid Molde, being at a place called Jule-Næſs, as I was reading in a book, I heard a kind of a murmuring voice from amongſt the men at the oars, who were eight in number, and obſerved that the man at the helm kept off from the land. Upon this I enquired what was the matter; and was informed that there was a Sea-ſnake before us. I then ordered the man at the helm to keep to the land again, and to come up with this creature, of which I had heard ſo many ſtories. Tho' the fellows were under ſome apprehenſions, they were obliged to obey my orders. In the mean time this Sea-ſnake paſſed by us, and we were obliged to

tack the veſſel about, in order to get nearer to it. As the Snake ſwam faſter than we could row, I took my gun, that was ready charged, and fired at it: on this he immediately plunged under the water. We rowed to the place where it ſunk down (which in the calm might be eaſily obſerved) and lay upon our oars, thinking it would come up again to the ſurface; however, it did not. When the Snake plunged down, the water appeared thick and red; perhaps ſome of the ſhot might wound it, the diſtance being very little. The head of this Snake, which it held more than two feet above the ſurface of the water, reſembled that of a horſe. It was of a greyiſh colour, and the mouth was quite black, and very large. It had black eyes, and a long white mane, that hung down from the neck to the ſurface of the water. Beſides the head and neck, we ſaw ſeven or eight folds or coils of this Snake, which were very thick, and, as far as we could gueſs, there was about a fathom diſtance between each fold. I related this affair in a certain company, where there was a perſon of diſtinction preſent, who deſired that I would communicate to him an authentic detail of all that happened; and for this reaſon two of my ſailors, who were preſent at the ſame time and place when I ſaw this monſter, namely, Nicholas Pederſen Kopper, and Nicholas Nicholſon Anglewigen, ſhall appear in court, to declare on oath the truth of every particular herein ſet forth; and I deſire the favour of an atteſted copy of the ſaid deſcriptions.

I remain, Sir, your obliged ſervant,

Bergen, 21 February, 1751.

L. de FERRY.

After this the before-named witneſſes gave their corporal oaths, and with their finger held up according to law, witneſſed and confirmed the aforeſaid letter or declaration, and every particular ſet forth therein, to be ſtrictly true. A copy of the ſaid atteſtation was made out for the ſaid Procurator Reutz, and granted by the recorder.

That this was tranſacted in our court of juſtice, we confirm with our hands and ſeals." Actum Bergis, Die & Loco, ut ſupra.

A. C. DASS. (L. S.) H. C. GARTNER, &c. (L. S.)

## SECT. VII.

Form: Governor Benſtrup affirms, that he ſaw the ſame creature a few years ago, and that he drew a sketch of the Sea-ſnake, which I wiſh

I wiſh I had to communicate to the public. I have however inſerted a draught that I was favoured with by the before-mentioned clergyman, Mr. Hans Strom, which he cauſed to be carefully made, under his own inſpection. This agrees in every particular with the deſcription of this monſter, given by two of his neighbours at Herroe, namely, Meſſ. Reutz and Tuchſen, and of which they had been eye-witneſſes. I might mention to the ſame purpoſe many more perſons of equal credit and reputation. Another drawing alſo, which appears more diſtinct with regard to the form of this creature, was taken from the reverend Mr. Egede's journal of the Greenland miſſion, where the account ſtands thus in p. 6. "On the 6th of July, 1734, there appeared a very large and frightful Sea-monſter, which raiſed itſelf up ſo high out of the water, that its head reached above our main-top. It had a long ſharp ſnout, and ſpouted water like a Whale, and very broad paws. The body ſeemed to be covered with ſcales, and the skin was uneven and wrinkled, and the lower part was formed like a Snake.

After ſome time the creature plunged backwards into the water, and then turned its tail up above the ſurface a whole ſhip-length from the head *. The following evening we had very bad weather." So far Mr. Egede. The drawing annexed gives me the greateſt reaſon to conclude, (what by other accounts I have thought probable) that there are Sea ſnakes, like other Fiſh, of different ſorts. That which Mr. Egede ſaw, and probably all thoſe who ſailed with him, had under its body two flaps, or perhaps two broad fins; the head was longer, and the body thicker †, but much ſhorter than thoſe Sea-ſnakes, of which I have had the moſt conſiſtent accounts. Though one cannot have an opportunity of taking the exact dimenſions of this creature, yet all that have ſeen it are unanimous in affirming, as far as they can judge at a diſtance, it appears to be of the length of a cable, i. e. 100 fathoms, or 600 Engliſh feet §; that it lies on the ſurface of

* I remember to have ſeen this Sea-ſnake repreſented in a large picture at Mr. Jacob Severin's, who then had the care of the expeditions to Greenland, under his majeſty's commiſſion, and had put a Latin verſe under it; the purport of which was, as far as I can remember, that he looked with diſdain upon that infernal Dragon, that ſeems to frighten all that come there with the deſign of enlightening and converting the Greenland heathens.

† In the New Survey of Old Greenland, p. 48, the before mentioned Mr. Egede ſpeaks of the ſame monſter, with this addition, that the body was full as thick and as big in circumference as the ſhip that he ſailed in. Mr. Bing, one of the miſſionaries, that took a drawing of it, informed his brother-in-law, Mr. Sylow, miniſter of Hougs in this dioceſe, that this creature's eyes ſeemed red, and like burning fire; all which makes it appear that it was not the common Sea-ſnake.

§. It was probably, from the appearance of this creature, that the valiant king Oluf

of the water (when it is very calm) in many folds, and that there are in a line with the head, ſome ſmall parts of the back to be ſeen above the ſurface of the water when it moves or bends. Theſe at a diſtance appear like ſo many casks or hogſheads floating in a line, with a conſiderable diſtance between each of them. Mr. Tuchſen of Herroe, whom I mentioned above, is the only perſon, of the many correſpondents I have, that informs me he has obſerved the difference between the body and the tail of this creature as to thickneſs.

It appears that this creature does not, like the Eel or Land-ſnake, taper gradually to a point, but the body, which looks to be as big as two hogſheads, grows remarkably ſmall at once juſt where the tail begins. The head in all the kinds has a high and broad forehead, but in ſome a pointed ſnout, though in others that is flat, like that of a cow or a horſe, with large noſtrils, and ſeveral ſtiff hairs ſtanding out on each ſide like whiskers.

It is ſuppoſed that the Sea-ſnakes have a very quick ſmell, which we may conclude from this, that they are obſerved to fly from the ſmell of caſtor. Upon this account thoſe that go out on Stor-Eggen to fiſh in the Summer, always provide themſelves with theſe animals. They add, that the eyes of this creature are very large, and of a blue colour, and look like a couple of bright pewter plates. The whole animal is of a dark-brown colour, but it is ſpeckled and variegated with light ſtreaks or ſpots, that ſhine like tortoiſe-ſhell. It is of a darker hue about the eyes and mouth than elſewhere, and appears in that part a good deal like thoſe horſes, which we call Moors-heads.

I do not find by any of my correſpondents, that they ſpout the water out of their noſtrils like the Whale, only in that one inſtance related by Mr. Egede, as mentioned above: but when it approaches, it puts the water in great agitation, and makes it run like the current at a mill. Thoſe on our coaſt differ likewiſe from the Greenland Sea-ſnakes, with regard to the skin, which is as ſmooth as glaſs, and has not the leaſt wrinkle, but about the neck, where there is a kind of a mane, which looks like a parcel of ſea-weeds hanging down to the water. Some ſay it annually ſheds its skin like the Land-ſnake; and it is affirmed, that a few years ſince there was to be ſeen at Kopperwiig, a cover for a table made of the skin of one of theſe ſnakes. This raiſed my

Oluf Trygvinſen, called his matchleſs ſhip of war Ormen Lange, that is, Long-ſnake. This extraordinary veſſel carried 1000 armed men, who, with their gilded ſhields hanging over on each ſide of the ſhip, gave this inanimate Sea-ſnake an appearance not inferior to the living one.

curioſity

curiosity to know the truth, and accordingly I wrote thither for proper information, desiring the favour of a slip of it, by way of specimen; but it seems there was no such thing, at least not at that time. besides, a man that came from the place told me he had never heard any thing of it. This person however inform'd me, that in the year 1720 a Sea-snake had lain a whole week in a creek near that place; that it came there at high water, through a narrow channel, about seven or eight feet broad, but went away, after lying there a whole week, as mentioned above, and left behind it a skin, which this man, whose name is Thorlack Thorlackson, declares he saw and handled. This skin lay with one end under water in the creek, and therefore, how long it was no-body could tell. It seems the creek within that channel is several fathoms deep, and it lay stretched out a great way; but the other end of the slouth had been driven ashore by the tide, where it lay a long time, for every body to examine. He said it did not seem fit to make a covering for a table, unless it had been properly dressed, or some other way prepared for that purpose; for it was not hard and compact, like a skin, but rather of a soft and slimy consistence, something like the Manæte before-describ'd. Even the body itself is said to be of the same nature, as I am informed by those who, by accident, once caught a young one, and laid it upon the deck of the ship. It died instantly, though no-body dar'd to go near it even then, till they were obliged to throw it overboard, by the insupportable stink which was caused by the soft and viscid slime, to which it was at length dissolved by the action of the wind *. It seems the wind is so destructive to this creature, that, as has been observed before, it is never seen on the surface of the water, but in the greatest calm, and the least gust of wind drives it immediately to the bottom again. One of these Sea-snakes was seen at Amunds Vaagen, in Nordfiord, some years ago. It came in between the rocks, probably at high water, and died there. It was observed that the carcase occasioned an intolerable stench for a long time. It

* We have the same account from Pere Labat, of a small Sea-serpent, about four feet long, and as thick as a man's arm. His words are, "Nous l'attachames au mât après l'avoir assommé pour voir quelle figure il auroit le lendemain. Nous connumes combien nôtre bonheur avoit été grand, de n'avoir point touché a ce poisson, qui sans doûte nous auroit tous empoisonnez. Car nous trouvames le matin qu'il s'étoit entierement dissous en une eau verdâtre & puante, qui avoit coulé sur le pont, sans qu'il restat presque autre chose que la peau & la reste, quoi qu'il nous eut paru le soir fort ferme & fort bon. Nous conclumes, ou que ce poisson étoit empoisonné par accident, ou que de sa nature ce n'étoit qu'un composé de venin. Je crois que c'étoit quelque vipere marin. J'en ay parlé à plusieurs pescheurs & autres gens de mer, sans avoir jamais pu être bien eclairci de ce que je voulois sçavoir touchant ce poisson. Nouveaux Voyages aux Isles Francoises de l'Amerique, Tom. v. cap. xiv. p. 335.

is ſaid the ſame alſo happened at the Iſland of Karmen, and in ſeveral other places. I wiſh that, on ſuch opportunities, ſomebody had examined the creature carefully, to ſee whether it had a ſtrong back bone, which ſeems neceſſary to ſupport ſuch a length.

The Shark kind, which are alſo of the cartilaginous claſs, and without other bones; yet have a back-bone, though that is but very ſlender, even in the largeſt ſpecies, which are often twenty feet in length. The Sea-ſnake ſeems alſo to be, like the Shark, Eel, and Whale-kind, viviparous. It appears that they ſeek their mates at a certain time of the year, in order, as it is ſaid, to couple. For this reaſon it is ſuppoſed they follow ſhips and boats at thoſe times, which probably appear to them to be creatures of their own kind. If this, which I have from the accounts of our ſea-faring people, be true, then I conclude they are miſtaken, who ſuppoſe that the Sea-ſnake does not breed in the ſea, but on dry land; and that it lives in rocks and woods, till it can no longer be concealed, and then betakes itſelf to rivers, in order to get into the ſea. There are ſome that pretend they have ſeen all this.

In the chapter of Land-ſnakes and Inſects I have already obſerved, that ſuch a ſudden tranſition from the freſh to the ſalt water ſeems very improbable. However, I will not entirely diſbelieve what is related of Water-ſnakes being ſeen in freſh lakes, ſome of which, in Sundfiord and Uland, are famous for theſe creatures; ſo that the inhabitants of the adjacent countries dare not venture to row acroſs them in a boat.

## SECT. VIII.

Danger. I return again to the Sea-ſnake, properly ſo called, or the Serpent of the Ocean, and particularly to the moſt intereſting inquiry concerning them, which is, Whether they do mankind any injury? And in what manner they may hurt the human ſpecies? Arndt. Bernſen, in his Account of the Fertility of Denmark and Norway, p. 308, affirms that they do; and ſays, that the Sea-ſnake, as well as the Trold-whale, often ſinks both men and boats. I have not heard any account of ſuch an accident hereabouts, that might be depended upon; but the North traders inform me of what has frequently happened with them, namely, that the Sea-ſnake has raiſed itſelf up, and thrown itſelf acroſs a boat, and ſometimes even acroſs a veſſel of ſome hundred tons burthen, and by its weight has ſunk it down to the bottom. One of the aforeſaid North traders, who ſays that he has been near enough

enough to ſome of theſe Sea-ſnakes (alive) to feel their ſmooth skin, informs me, that ſometimes they will raiſe up their frightful heads, and ſnap a man out of a boat, without hurting the reſt: but I will not affirm this for a truth, becauſe it is not certain that they are a Fiſh of prey. Yet this, and their enmity to mankind, can be no more determined, than that of the Land-ſnake, by the words of the prophet Amos, Cap. ix. v. 3. "And though they be hid from my ſight in the bottom of the ſea, thence will I command the ſerpent, and he ſhall bite them."

It is ſaid that they ſometimes fling themſelves in a wide circle round a boat, ſo that the men are ſurrounded on all ſides. This Snake, I obſerved before, generally appears on the water in folds or coils; and the fiſhermen, from a known cuſtom in that caſe, never row towards the openings, or thoſe places where the body is not ſeen, but is concealed under the water; if they did, the Snake would raiſe itſelf up, and overſet the boat. On the contrary, they row full againſt the higheſt part that is viſible, which makes the Snake immediately dive; and thus they are releaſed from their fears. This is their method when they cannot avoid them: but when they ſee one of theſe creatures at a diſtance, they row away with all their might (by which they ſometimes injure their health) towards the ſhore, or into a creek, where it cannot follow them.

When they are far from land it would be in vain to attempt to row away from them; for theſe creatures ſhoot through the water like an arrow out of a bow, ſeeking conſtantly the coldeſt places*. In this caſe they put the former method in execution, or lye upon their oars, and throw any thing that comes to hand at them. If it be but a ſcuttle, or any light thing, ſo they be touch'd, they generally plunge into the water, or take another courſe. Of late our fiſhermen have found the way, in the warm Summer months, of providing themſelves with caſtor, which they always carry with them when they go far out to ſea: they ſhut it up in a hole in the ſtern, and if at any time they are particularly apprehenſive of meeting with the Sea-ſnake, they throw a little of it over-board; for by frequent experience they know of a certainty, that it always avoids this drug. Luke Debes tells us, in his Færoa referata, p. 167, that in that country alſo they uſe it with the ſame ſucceſs, as the beſt defence againſt the Trold Whale, a Fiſh that likewiſe often overſets boats, but which has a great averſion to caſtor and ſhavings of juniper wood. Theſe Preſervation.

* They generally tack about their boat; ſo that if the Snake will purſue them, it muſt look againſt the Sun, which its eyes will not bear.

they

they throw out to him therefore when in danger. The author, juſt cited alſo ſays, that various experiments confirm this ſingular phænomenon, that if any man has caſtor about him when in the water, he ſinks inſtantly to the bottom like a ſtone, though he be ever ſo good a ſwimmer. For the truth of this he relies upon the Teſtimony of Thom. Bartholin. in Centur. II. Hiſtor. Anatom. Hiſt. 17, p. 201.

An eminent apothecary here has informed me, that, inſtead of caſtor, our fiſhermen provide themſelves with nothing but Aſſa fætida, by way of defence againſt the hurtful Sea-animals: for if what they carry have but a ſtrong ſmell, it has the ſame effect upon thoſe Sea-ſnakes, &c. beſides, Aſſa fætida comes at a lower price than caſtor.

In the remote parts of Norway, according to ſome accounts, people have been poiſoned with the excrements of the Sea-ſerpent, which are often ſeen here, eſpecially in Nordland, in the Summer months, floating on the water like a fat ſlime. This viſcid matter is ſuppoſed by our fiſhermen to be ſomewhat vomited up by them, or elſe their ſperm, or ſome other humour. If a fiſherman finds this matter near his net, and inadvertently lets any of it touch his hand, it will occaſion a painful ſwelling and inflammation, which has often proved ſo dangerous as to require an amputation of the limb.

Mr. Peter Daſs, in his Deſcription of Nordland, is of opinion that this Sea-ſerpent may be called the Leviathan, or the Dragon of the ocean: I ſhall give the reader ſome verſes he has publiſhed on this ſubject.

" Om Soe-Ormen veed jeg ey nogen Beſkeed,
Jeg haver ham aldrig med Oynene ſeed,
Begierer ey heller den Ære;
Dog kiender jeg mange, ſom mig have ſagt,
Hvis Ord jeg og giver ſandfærdelig Magt,
Han maa ret forfærdelig være.

Naar Julius gaaer i ſin fyrſtelig Stads,
Og Phœbus omvanker i Luftens Pallads,
Da lader ſig det Dyr fornemme.
Der ſiges, han er af en ſaadan Natur
Hvad Baad han fornemmer det ſkadelig Diur,
Han tiendes efter mon ſvæmme.

Umaadelig

Umaadelig ſluttes hans Storlighed og,
Det vel af Forfarenhed viiſes kand nok;
Thi de hannem komme i Mode
Fortælle, han ligger i Længden udſtrakt,
Som hundrede Læs var paa Havet udlagt,
Som Moding paa Ageren ode.

Mig tykkes han lignes maa Behemots Magt
Samt og Leviathan, ſom holder Foragt
Al Vaaben og bevende Spidſe;
Thi Jernet er hannem ſom ſtilker og Hor,
Og Raaber ſom Quiſten der raadner og doer,
Det Gud os beſkriver til viſſe.

Which being tranſlated literally runs thus:

The great Sea-ſnake's the ſubject of my verſe;
For tho' my eyes have never yet beheld him,
Nor ever ſhall deſire the hideous ſight;
Yet many accounts of men of truth unſtain'd,
Whoſe ev'ry word I firmly do believe,
Shew it to be a very frightful monſter.

When Julius enters in his princely ſtate,
And Sol turns back in his aerial courſe,
Then does this hideous monſter firſt appear.
It's ſaid that ſuch is the pernicious nature
Of this dire Snake, that every boat he ſees,
He firſt purſues, and then attempts to ſink.

Immenſe his ſize, enormous is his bulk;
Which by the experience, may be plainly ſhown,
Of thoſe that have beheld this frightful monſter.
When on the ſea he lies, ſtretched at his length,
He ſeems a hundred loads; ſo vaſt his bulk!

Methinks he ſeems another Behemoth,
Or the Leviathan, who doth deſpiſe
All arms, as ſwords, and guns, and glittering ſpears;
For iron is to him like ſtraw or flax,
And copper like the twigs that bend or break:
For thus he is deſcrib'd in ſacred writ.

## SECT. IX.

If it can be the Leviathan rather than the Whale.

I have quoted theſe verſes, as a kind of a teſtimony to the exiſtence and properties of this extraordinary creature. The ſuppoſition that the Sea-ſnake anſwers the deſcription of the Leviathan better than any other animal yet known; and may be underſtood by the Leviathan, or the Crooked-ſerpent, Iſaiah xxvii. 1. that ſhall ſlay the Dragon that is in the ſea; or that it may be the Long-ſerpent mentioned in Job xxvi. 13; is not without ſome foundation. That it is the Piercing-ſerpent or the Boom-ſerpent, Serpens vectis, according to ſome authors, is not improbable; for they often lie ſtretched out before a creek, like a boom, to block up the paſſage. If Bochart had had any knowledge of this creature, which is very little known any where but in the North, he probably would not have taken the Whale to be the Leviathan. "Cetum Hebræi iiſdem nominibus appellant quibus draconem nempe Thannin & Leviathan, aut ob formæ ſimilitudinem, aut ratione molis, & quia Cetus in aquatilibus tantum præſtat, quantum in reptilibus præſtant virtute Dracones." Hierozoic. Lib. i. cap. vi. p. 45. The ſimilitude of ſhape, which writers urge betwixt the Whale and the Dragon, is what I cannot find out; nor can I diſcover how this author (whom I otherwiſe eſteem as one of the moſt learned men the world ever produced) comes to ſay, in the ſame place, p. 50, "Balænam multi volunt ideo dici נחש ברח Serpentem vectis, Iſaiah xxvii. 1. quod ab uno maris extremo ad alterum, vectis inſtar, attingat." This does not at all agree with the Whale, which is uſually but 50, 70, or at moſt 80 feet in length *; at leaſt not near ſo well as with the Sea-ſnake. The length of this creature, as I obſerved above, according to our fiſhermen, who have ſeen them, is equal to that of a cable, that is, 600 feet. Theſe Sea-ſnakes alſo, like other creatures, may not be all exactly of a ſize; but ſome, perhaps, may be found twice as large as others of their kind, as may be obſerved of the Land-ſnakes, which differ very much in ſize. I have been informed by ſome of our ſea-faring men, that a cable would not be long enough to meaſure the length of ſome of them, when they are obſerved on the ſurface of the water in an even line. They ſay thoſe round lumps or folds ſometimes lie, one

* Bochart in the ſame place diſclaims the Talmudiſts palpable falſities about the Whale's ſize, &c. "Hebræi ſæpe mendaces in hoc argumento potiſſimum mentiuntur liberaliſſime. In illis modeſtiſſimi cetis quingentorum ſtadiorum longitudinem aſſignant, hoc eſt milliarium plus ſexaginta. In Tractatu Talmudico Bava Bathra, fol. 73. col. 2. Navis quædam in dorſo ceti navigans, iter ab una pinna ad alteram, tertio demum die confecit.

after

after another, as far as a man can ſee. I confeſs, if this be true, that we muſt ſuppoſe moſt probably that it is not one Snake, but two or more of theſe creatures lying in a line, that exhibit this phænomenon. This may happen as they follow one another, eſpecially at the time of the year when they ſpawn, or couple together: at this ſeaſon alſo they may be induced to follow boats, as I have mentioned before. I muſt obſerve further, that what the word of God ſays, in the place already cited, of the Leviathan, viz. that it is both a Pole-ſerpent and a Crooked-ſerpent, i. e. he is ſoon bent in a curve, and ſoon ſtretched again in a ſtrait line, agrees perfectly with this Sea-ſnake, according to what has already been ſaid *. It may not be thought ſuperfluous here to quote the words of Mr. J. Ramus, in his Deſcription of Norway, p. 43, which is as follows. "Anno 1687, a large Sea-ſnake was ſeen by many people in Dramsfiorden; and at one time by eleven perſons together. It was in very calm weather; and ſo ſoon as the ſun appeared, and the wind blew a little, it ſhot away juſt like a coiled cable, that is ſuddenly thrown out by the ſailors; and they obſerved that it was ſome time in ſtretching out its many folds. Ol. Magnus, in his Hiſtor. Septentrion. Lib. xxi. c. 24, ſpeaks of a Norvegian Sea-ſnake 80 feet long, but not thicker than a child's arm. "Eſt in littoribus Norvegicis vermis glauci coloris, longitudine xl. cubitorum, & amplius vix ſpiſſitudinem infantis brachii habens." This creature, he ſays, was put to ſuch pain by the Crabs faſtening on it, that it writhed itſelf into a hundred ſhapes. I have never heard of this ſort from any other perſon, and ſhould hardly believe the good Olaus, if he did not ſay that he affirmed this from his own experience. "Hunc vermem ſæpius vidi, ab ejus tactu, nautarum informatione, abſtinens." — — — The diſproportion betwixt the thickneſs of a child's arm, and a length of 80 feet, makes me think there muſt be an error of the preſs in the place, for xl. perhaps ſhould be xi. ells, or 22 feet; a more proportionable length for the thickneſs. Of the other Sea-ſnake the ſame author writes afterwards, chap. xxvii. but he mixes truth and fable together, according to the relations of others; but this was excuſable in that dark age,

* If any one enquires how many folds may be counted on a Sea-ſnake, the anſwer is, that the number is not always the ſame, but depends upon the various ſizes of them: five and twenty is the greateſt number I find well atteſted. Adam Olearius, in his Gottorf Muſæum, p. 17, writes of it thus: "A perſon of diſtinction from Sweden, related here at Gottorf, that he had heard the burgomaſter of Malmoe, a very worthy man, ſay, that as he was once ſtanding on the top of a high hill towards the North ſea, he ſaw in the water, which was very calm, a Snake, which appeared at that diſtance to be as thick as a pipe of wine, and had 25 folds. Thoſe kind of Snakes only appear at certain times, and in calm weather."

when

when that author wrote. Notwithſtanding all this, we in the preſent more enlighten'd age are much obliged to him, for his induſtry, and judicious obſervations. The ſum of what he relates in that place is this: "Thoſe that viſit the coaſts of Norway tell us of a very ſtrange phænomenon; namely, that there is in thoſe ſeas a Snake 200 feet long, and 20 feet round, which lives in the hollows of the rocks, and under the cliffs, about Bergen, (but in this he errs) and goes out in moon-light nights to devour calves, ſheep, and ſwine; or elſe it goes to the ſea, and catches Star-fiſh, Crabs, &c. It has a mane two feet long; it is covered with ſcales, and has fiery eyes: it diſturbs ſhips, and raiſes itſelf up like a maſt; and ſometimes ſnaps ſome of the men from the deck." So far that writer, who, in the remainder of the chapter, ſpeaks of that great Water-ſerpent in Mioſen on Hedemarken, that foretold the king's death, and the great changes that were to happen, according to the ſuperſtitious notions of that age.

## SECT. X.

Before I leave this ſubject, it may be proper to anſwer a queſtion that may be put by ſome people; namely, what reaſon can be aſſigned why this Snake of ſuch extraordinary ſize, &c. ſhould be found in the North ſea only? For, according to all accounts from ſea-faring people, it has never been ſeen any where elſe. Thoſe who have ſailed in other ſeas in different parts of the globe, have, in their journals, taken particular notice of other Sea-monſters; but not one of them mentions this. To this I anſwer, that when the thing is confirmed by unqueſtionable evidence, and is found to be true, then this objection requires no other anſwer, than that the Lord of nature diſpoſes of the abodes of his various creatures, in different parts of the globe, according to his wiſe purpoſes and deſigns: the reaſon of his proceedings cannot, nor ought to be comprehended by us. Why does not the Rain-deer thrive in any other climate, except on the cold and bleak mountains of the North? Why does the enormous Whale keep only in thoſe icy regions that are contiguous to the pole? Or, why are the Indies and Egypt the only places where the Crocodile exhibits his hideous form, and terrifies the unwary traveller? No other reaſon can be aſſigned but this, namely, becauſe the wiſe Creator has thought fit that it ſhould be ſo; and whatever he wills is right, and ordered for the beſt.

The North ſea their original native place.

While

While I am ſpeaking of Egypt, I recollect from the aſſociation of ideas, that though I have not read of any Sea-ſerpents in thoſe parts of the globe, yet I find that in Egypt, and other places in Africa, there are found in freſh-water lakes and rivers a ſpecies of Serpents, almoſt as large as that which I am treating of, and even more dangerous. Large Serpents in other places.

Pliny ſays, in his Hiſt. Nat. Lib. viii. cap. xiv. "Megaſthenes ſcribit, in India ſerpentes in tantam magnitudinem adoleſcere, ut ſolidos hauriant cervos tauroſque. Metrodorus circa Rhyndacum amnem in Ponto ut ſupervolantes, quamtumvis alte perniciterque alites hauſtu raptas abſorbeant. Nota eſt in Punicis bellis ad flumen Bagradam a Regulo Imperatore baliſtis tormentiſque ut oppidum aliquod expugnata ſerpens cxx. pedum longitudinis. Pellis ejus maxillæque uſque ad bellum Numantinum duravere Romæ in templo. Faciunt his fidem in Italiam appellatæ Boæ, in tantam amplitudinem exeuntes, ut divo Claudio Principe, occiſæ in Vaticano ſolidus in alvo ſpectatus ſit infans. Aluntur primo bubuli lactis ſucco, unde nomen traxere. Cæterorum animalium, quæ modo convecta undique Italiæ contigere ſæpius, formas nihil attinet ſcrupuloſe referre."

What is here related, concerning a Serpent that was killed near the river Bagrada in Africa, ſeems almoſt incredible, though it is confirmed by Livy in his 29th decade, primi belli Punici, and by Valer. Max. Lib. i. cap. ult. One could hardly be able to comprehend or believe that a Serpent could ſtop a whole Roman army, and diſpute their paſſage acroſs a river; or that it killed many of the people, who, with their beſt weapons, could hardly wound it: but we ſee on what authorities it is ſupported. Still more ſtrange is that ſtory which Diodorus Siculus, Lib. iii. relates of a Serpent in Egypt, 60 feet long, which, though but ſmall in compariſon of thoſe we have been ſpeaking of, yet is in appearance too large to be caught, and carried alive to Alexandria, to be preſented to king Ptolomy the Second.

This great prince was eminent for his curioſity, he was deſirous of ſeeing every thing that was ſtrange or ſcarce. Thoſe that brought him elephants, or any other uncommon animals, were liberally rewarded. By this means the Greeks became acquainted with many things that were before utterly unknown to them. Such a laudable curioſity, and ſo noble a ſpirit in a king, to reward all thoſe that contributed to pleaſe and inſtruct him, prevailed upon a company of huntſmen to attempt to bring him the aforeſaid great Serpent, which lived chiefly in the water, but ſtrayed aſhore from its proper element a conſiderable diſtance

every day, to make a prey of the farmers cattle for his ſubſiſtence. Their firſt attack, which was very vigorous, failed, as the hiſtorian ſays, and coſt about twenty of them their lives; but as the reſt grew more experienced by this loſs, they would not relinquiſh their enterprize, being in hopes of receiving a greater reward, in caſe they ſhould ſucceed. They conquered it at laſt, by making a large net of very ſtrong ropes, and watching their opportunity when the creature went out in ſearch of prey; then they ſtopped up the way it uſually took in its return, and made a kind of a defile, through which it was obliged to paſs. At the end of this they placed the net, and drove the monſter into it. When they had thus ſecured it, they carried it to the king, who gave them a reward ſuited to the ſtrangeneſs of the creature, and the hazard of their enterprize. The Serpent was ſaved to be a ſight for ſtrangers who viſited Ptolemy's court, and had every day a large allowance of proper food. The author concludes from this what Odoard Dapper, and other writers of later date, confirm, namely, that in Æthiopia, and other parts of Africa, there are Serpents large enough to devour not only oxen, but alſo the largeſt elephants, firſt by twiſting themſelves about their legs, and after thus entangling them, they overpower them with eaſe.

## SECT. XI.

Kraken, or Korven, the largeſt creature in the world.

I am now come to the third and inconteſtibly the largeſt Sea-monſter in the world; it is called Kraken, Kraxen, or, as ſome name it, Krabben, that word being applied by way of eminence to this creature. This laſt name ſeems indeed beſt to agree with the deſcription of this creature, which is round, flat, and full of arms, or branches. Others call it alſo Horven, or Soe-horven, and ſome Anker-trold. Among all the foreign writers, both ancient and modern, which I have had opportunity to conſult on this ſubject, not one of them ſeems to know much of this creature, or at leaſt to have a juſt idea of it. What they ſay however of floating iſlands, as they apprehended them to be, (a thing improbable that they ſhould exiſt in the wild tumultuous ocean) ſhall afterwards be ſpoken of, and will be found applicable without any hyperbole to this creature, when I ſhall have firſt given ſome account of it. This I ſhall do according to what has been related to me by my correſpondents, and what I have otherwiſe collected by an induſtrious enquiry and examination into every particular, concerning which I could receive intelligence. All this, in compariſon to the unknown nature and conſtruction

ſtruction of the creature, is very ſhort of a perfect account, deficient, and calculated to awake rather than ſatisfy the reader's curioſity. Bochart might therefore with reaſon ſay, Lib. 1. cap. 6, with Oppian. Halieut. cap. 1. In mari multa latent, i. e. In the ocean many things are hidden. Amongſt the many great things which are in the ocean, and concealed from our eyes, or only preſented to our view for a few minutes, is the Kraken. This creature is the largeſt and moſt ſurprizing of all the animal creation, and conſequently well deſerves ſuch an account as the nature of the thing, according to the Creator's wiſe ordinance, will admit of. Such I ſhall give at preſent, and perhaps much greater light in this ſubject may be reſerved for poſterity, according to the words of the ſon of Sirach, "Who hath ſeen him, that he might tell us? and who can magnify him as he is? There are yet hid greater things than theſe be, for we have ſeen but a few of his works." Eccluſ. chap. xliii. ver. 31, 32.

## SECT. XII.

Our fiſhermen unanimouſly affirm, and without the leaſt variation in their accounts, that when they row out ſeveral miles to ſea, particularly in the hot Summer days, and by their ſituation (which they know by taking a view of certain points of land) expect to find 80 or 100 fathoms water, it often happens that they do not find above 20 or 30, and ſometimes leſs. At theſe places they generally find the greateſt plenty of Fiſh, eſpecially Cod and Ling. Their lines they ſay are no ſooner out than they may draw them up with the hooks all full of Fiſh; by this they judge that the Kraken is at the bottom. They ſay this creature cauſes thoſe unnatural ſhallows mentioned above, and prevents their ſounding. Theſe the fiſhermen are always glad to find, looking upon them as a means of their taking abundance of Fiſh. There are ſometimes twenty boats or more got together, and throwing out their lines at a moderate diſtance from each other; and the only thing they then have to obſerve is, whether the depth continues the ſame, which they know by their lines, or whether it grows ſhallower by their ſeeming to have leſs water. If this laſt be the caſe, they find that the Kraken is raiſing himſelf nearer the ſurface, and then it is not time for them to ſtay any longer; they immediately leave off fiſhing, take to their oars, and get away as faſt as they can. When they have reached the uſual depth of the place, and find themſelves out of danger, they lie upon their oars, and in a few minutes after they ſee this enormous monſter come up to the ſurface of the water; he there ſhows

Deſcription.

ſhows himſelf ſufficiently, though his whole body does not appear, which in all likelihood no human eye ever beheld (excepting the young of this ſpecies, which ſhall afterwards be ſpoken of;) its back or upper part, which ſeems to be in appearance about an Engliſh mile and an half in circumference, (ſome ſay more, but I chuſe the leaſt for greater certainty) looks at firſt like a number of ſmall iſlands, ſurrounded with ſomething that floats and fluctuates like ſea-weeds. Here and there a larger riſing is obſerved like ſand-banks, on which various kinds of ſmall Fiſhes are ſeen continually leaping about till they role off into the water from the ſides of it; at laſt ſeveral bright points or horns appear, which grow thicker and thicker the higher they riſe above the ſurface of the water, and ſometimes they ſtand up as high and as large as the maſts of middle-ſiz'd veſſels.

It ſeems theſe are the creature's arms, and, it is ſaid, if they were to lay hold of the largeſt man of war, they would pull it down to the bottom. After this monſter has been on the ſurface of the water a ſhort time, it begins ſlowly to ſink again, and then the danger is as great as before; becauſe the motion of his ſinking cauſes ſuch a ſwell in the ſea, and ſuch an eddy or whirlpool, that it draws every thing down with it, like the current of the river Male, which has been deſcribed in its proper place.

As this enormous Sea-animal in all probability may be reckon'd of the Polype, or of the Star-fiſh kind, as ſhall hereafter be more fully proved, it ſeems that the parts which are ſeen riſing at its pleaſure, and are called arms, are properly the tentacula, or feeling inſtruments, called horns as well as arms. With theſe they move themſelves, and likewiſe gather in their food.

Beſides theſe, for this laſt purpoſe the great Creator has alſo given this creature a ſtrong and peculiar ſcent, which it can emit at certain times, and by means of which it beguiles and draws other Fiſh to come in heaps about it. This animal has another ſtrange property, known by the experience of a great many old fiſhermen. They obſerve, that for ſome months the Kraken or Krabben is continually eating, and in other months he always voids his excrements. During this evacuation the ſurface of the water is coloured with the excrement, and appears quite thick and turbid. This muddineſs is ſaid to be ſo very agreeable to the ſmell or taſte of other Fiſhes, or to both, that they gather together from all parts to it, and keep for that purpoſe directly over the Kraken: he then opens his arms, or horns, ſeizes and ſwallows his welcome gueſts, and converts them, after the due time, by digeſtion, into a bait for other Fiſh of the ſame kind. I relate what

what is affirmed by many; but I cannot give ſo certain aſſurances of this particular, as I can of the exiſtence of this ſurprizing creature; though I do not find any thing in it abſolutely contrary to nature. As we can hardly expect an opportunity to examine this enormous ſea-animal alive, I am the more concerned that nobody embraced that opportunity which, according to the following account, once did, and perhaps never more may offer, of ſeeing it entire when dead. The reverend Mr. Friis, conſiſtorial aſſeſſor, miniſter of Bodoen in Nordland, and vicar of the college for promoting chriſtian knowledge, gave me at the latter end of laſt year, when he was at Bergen, this relation; which I deliver again on his credit.

In the year 1680 a Krake (perhaps a young and careleſs one) came into the water that runs between the rocks and cliffs in the pariſh of Alſtahoug, though the general cuſtom of that creature is to keep always ſeveral leagues from land, and therefore of courſe they muſt die there. It happened that its extended long arms, or antennæ, which this creature ſeems to uſe like the Snail, in turning about, caught hold of ſome trees ſtanding near the water, which might eaſily have been torn up by the roots; but beſide this, as it was found afterwards, he entangled himſelf in ſome openings or cleſts in the rock, and therein ſtuck ſo faſt, and hung ſo unfortunately, that he could not work himſelf out, but periſhed and putrified on the ſpot. The carcaſe, which was a long while decaying, and filled great part of that narrow channel, made it almoſt impaſſable by its intolerable ſtench.

The Kraken has never been known to do any great harm, except they have taken away the lives of thoſe who conſequently could not bring the tidings. I have never heard but one inſtance mentioned, which happened a few years ago near Fridrichſtad, in the dioceſs of Aggerhuus. They ſay that two fiſhermen accidentally, and to their great ſurprize, fell into ſuch a ſpot on the water as has been before deſcribed, full of a thick ſlime, almoſt like a moraſs. They immediately ſtrove to get out of this place, but they had not time to turn quick enough to ſave themſelves from one of the Kraken's horns, which cruſhed the head of the boat ſo, that it was with great difficulty they ſaved their lives on the wreck, tho' the weather was as calm as poſſible; for theſe monſters, like the Sea-ſnake, never appear at other times.

## SECT. XIII.

Still farther confirmations.

I have now given all the intelligence that has come to my knowledge concerning this vaſt, but hitherto hardly at all known Sea-animal; and now I ſhall relate farther, according to what I think is moſt probable, ſome properties that may be preſumed to belong to it. This may give ſome light into the hiſtory of it, and alſo ſerve as a farther confirmation of what has been ſaid concerning it. Mr. Luke Debes, in his Deſcription of Faroe, ſpeaks of certain iſlands which ſuddenly appear, and as ſuddenly vaniſh. This was a thing no-body could comprehend; ſo that one ought not to wonder at the common people, and even thoſe that were a degree above them, for looking upon thoſe moving iſlands to be inhabited by evil ſpirits, which appeared ſometimes in ſuch places where the ſea-men, by daily experience, knew very well that there was no ſuch thing as a rock, much leſs an iſland; but however, they often found ſomething at ſea which had the appearance of land, and conſequently were confounded, made falſe reckonings, and were taken out of their courſe, and brought into the greateſt inconveniences*. Many ſea-faring people give accounts of ſuch appearances of land, and their ſuddenly vaniſhing away, and particularly here in the North-ſea. Theſe iſlands, in the boiſterous ocean, cannot be imagined to be of the nature of thoſe real floating iſlands, that are ſeen on freſh and ſtagnated waters; and which I have obſerved, P. I. c. 3, are found here in Norway, and in other places.. Theſe could not poſſibly hold or ſtand againſt the violence of the waves in the ocean, which break the largeſt veſſels; and therefore our ſailors have concluded this deluſion could come from no other than that great deceiver the devil. But, according to the laws of truth, we ought not to charge this apoſtate ſpirit without a cauſe. I rather think that this devil, who ſo ſuddenly makes and unmakes theſe floating iſlands, is nothing elſe but the Kraken, which ſome ſea-faring people call Soe-draulen, that is, Soe-trolden, Sea-miſchief. What confirms me in this opinion is the following occurrence, quoted by that worthy Swediſh phyſician Dr. Urban Hierne, in his Short Introduction to an Enquiry into the Ores and Minerals of that country, p. 98, from Baron Charles Grippenhielm. The quota-

A notion of floating iſlands.

* Concerning moving iſlands, ſee Everh. Harpelii Mund. Mirab. Tom. I. Lib. iv. cap. 20, 21; and in Thormod. Torf. there is a remarkable teſtimony of the ſame kind, concerning an iſland appearing in Breidefiord, on the coaſt of Iceland, Annales notant, emerſiſſe ex undis inſulam quandam vel rupes (An. 1345) antea nunquam viſas in ſinu Iſlandiæ Brediafiordo. Hiſt. Norw. P. IV. L. ix. c. viii. p. 477. It is a pity that he does not tell us whether it always remained there.

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tion is as follows: "Amongſt the rocks about Stockholm there is ſometimes ſeen a certain tract of land, which at other times diſappears, and is ſeen again in another place. Buræus has placed this as an iſland in his map. The peaſants, who call it Gumarsore, ſay that it is not always ſeen, and that it lies out in the open ſea, but I could never find it. One Sunday, when I was out among the rocks, ſounding the coaſt, it happened that, in one place, I ſaw ſomething like three points of land in the ſea, which ſurpris'd me a little, and I thought that I had inadvertently paſſed them over before. Upon this, I called to a peaſant to enquire for Gummars-ore, but when he came we could ſee nothing of it; on which, the peaſant ſaid all was well, and that this prognoſticated a ſtorm, or a great quantity of Fiſh, &c." So far Grippenhielm. Now who is it that cannot diſcover, at firſt ſight, that this viſible and inviſible Gummars-ore, with its points and prognoſtications of Fiſh, cannot poſſibly be any thing elſe but the Kraken, Krabben, or Soe-horven, improperly placed in a map by Buræus as an iſland. Probably the creature keeps himſelf always about that ſpot, and often riſes up amongſt the rocks and cliffs.

What the credulous Ol. Magnus, in Hiſt. Septentr. Lib. xx. cap. 25, writes, of the Whale being ſo large, that his back is looked upon as an iſland; and that people might land, light fires, and do various kinds of work upon it, is a notoriouſly fabulous and ridiculous romance. His words are: "Unde plerumque elevato dorſo ſuo ſuper undas, a navigantibus nihil aliud creditur eſſe, quam inſula. Itaque nautæ ad illum appellunt & ſuper eum aſcendunt, palos figunt, naves alligant, focos pro cibis coquendis accendunt. Donec tandem cetus, ſentiens ignem, ſeſe in profundum mergat, &c. Arenas aliquando dorſo ſuo tollit, in quibus, ingruente tempeſtate, nautæ terram ſe inveniſſe gaudentes, anchoris demiſſis, falſa firmitate quieſcunt, ac ignes accenſos bellua ſentiens, ſubito commota ſe in aquas mergit, hominesque cum navibus, niſi anchoræ rumpantur, in profundum attrahit." We may eaſily ſee what gave occaſion for mixing the probable with the improbable, by recollecting what has been obſerved above of the Kraken, of which people have had ſome imperfect idea for ſeveral ages back. Even Pliny, in his time, had heard ſome obſcure account of ſuch a Sea-animal as is here treated of. This may be concluded from his words in Lib. ix. cap. iv. "Maximum animal in Indico mari Priſtris & Balæna eſt, in Gallico oceano Phyſeter, ingentis columnæ modo ſe attollens, altiorque navium velis diluviem quandam eructans. In Gaditano oceano ARBOR, in tantum vaſtis

It was not entirely unknown to Pliny.

vaſtis diſpenſa ramis, ut ex ea cauſa fretum nunquam intraſſe credatur. Apparent & ROTÆ appellatæ a ſimilitudine, quaternis diſtinctæ radiis, modiolos eorum oculis duobus utrinque claudentibus Ionis." The double account that is here given of a creature which reſembles a wheel, ſeparated into rays, or a tree, with ſuch large branches that it cannot get through a channel, ſeems to agree with the accounts of the Kraken already given, with his many large horns or branches, as it were ſpringing up from its body, which is round *. Both theſe deſcriptions confirm my former ſuppoſitions, namely, that this Sea-animal belongs to the Polype or Star-fiſh ſpecies, which have been particularly deſcribed in the preceding chapter. It ſeems to be of that Polypus kind which is called by the Dutch Zee-ſonne, by Rondeletius and Geſner Stella Arboreſcens, i. e. a Star which ſhoots its rays into branches like thoſe of trees, according to the more exact deſcription juſt referred to, where I gave it the name of Meduſa's Head.

What I have farther to obſerve is, that this curl'd ſort of Star-fiſh, with ſo many branches or rays, is very apt to ſtick to, and entangle themſelves in the weeds and ſhrubs that grow at the bottom of the ſea, and are often drawn up with them by the fiſhermen. When they are dried, and their branches are ſhrunk in, they are ſeldom above ſix or eight inches in diameter; but when they are juſt taken out of the water they are much larger. A very worthy perſon told me he had ſome of them of an extraordinary bigneſs; and others have ſeen them above four times as large as the common ſize, ſplaſhing the water about with their numerous branches or arms.

Theſe Meduſa's-heads are ſuppoſed, by ſome ſea-faring people here, to be the young of the great Sea-krake; perhaps they are their ſmalleſt ovula: and I do not doubt but it is the ſame Meduſa's-head, or Stella Arboreſcens, of which Mr. Griffith Hugues treats in the Philoſophical Tranſactions. This having juſt come into my hands, I ſhall inſert it; and ſhall likewiſe add to it, what has been quoted in the preceding chapter. "Il a decouvert une nouvelle eſpece d'Etoile de mer, laquelle ſort du rocher par une eſpece de pedicule, & elle exprime exactement la figure rayonnée de la fleur d'une Ficoide. Mais cette fleur eſt

* In that ancient manuſcript called Speculum Regale, becauſe it is aſcribed to the Norvegian king Sverre, Ol. Wormius, who had the treatiſe in his hands, found ſome few words, which ſeem to allude to this the largeſt creature of the ocean; for when, in his Muſeum, p. 279, he is enumerating the various ſorts of Whales, he concludes, p. 280, with the following words: "Reſtat una ſpecies, quam Hafgufe vocant, cujus magnitudo latet, cum raro conſpiciatur. Illi, qui ſe corpus vidiſſe narrant, ſimiliorem inſulæ quam Beſtiæ volunt, nec unquam ejus inventum cadaver, quocirca ſunt qui exiſtiment, non niſi duo ejus generis in natura eſſe.

preſque

preſque ſenſitive. Au moindre attouchement elle ſe replie, & va ſe cacher avec ſon pedicule dans le rocher, d'ou elle etoit ſortie. Ses rayons ſont des bras, qui ont bien l'air de ceux d'un Polype. Quel charme pour un Phyſicien, que de poſſeder un Polype de cette grandeur, & quelles obſervations n'y feroit il pas ſur l'accroiſſement & la reparation de ſes parties?" Biblioth. Raiſonee, T. xxxvii. p. 266. However this may be, it remains an unqueſtionable truth, that certain kinds of Polypus's grow to a monſtrous ſize. Athanaſ. Kircher ſays, in his Mund. Subterran. P. I. p. 99, that in the Sicilian ſeas there are found a kind of Star-fiſh, which have ten rays, or branches, and a body as big as that of a man: but this bears no proportion to the bigneſs of a Whale, which Athenæus, in Lib. xiii. cap. vi. attributes to ſome of them. Pliny, lib. ix. cap. xxx. ſpeaks of a ſort of Polypus of a monſtrous ſize, by the name of Ozæna *, becauſe it diffuſes a ſtrong ſmell; for which reaſon other Fiſh are apt to follow them. This ſingularity agrees exactly with what has been ſaid already about the Norvegian Krake, "Mire omnibus marinis expetentibus odorem." Concerning the ſaid Polypus Pliny relates in the ſame place, according to the account he had received from L. Lucullus, the proconſul of Bætica, ſeveral ſtrange ſtories about their ſize and ſtrength; as that they lay along the coaſt, where they would ſteal the merchants goods, and drag them away with their long claws; ſo that they were obliged to ſet dogs upon them: that thoſe animals could not bear the ſtrong ſmell, and were alſo ſeverely handled by the creatures; and that it was with great difficulty they killed them with iron forks, &c. "Namque & afflatu terribili canes agebat, nunc extremis crinibus flagellatos, nunc robuſtioribus brachiis, clavorum modo incuſſos, ægreque multis tridentibus confici potuit." We learn from all this, that the Polype, or Star-fiſh, or, as we call it here, the whole genus of Kors-Trold, have, amongſt their various ſpecies, ſome that are much larger than others; and, according to all appearance, even the very largeſt inhabitants of the ocean. If the axiom be true, that greatneſs or littleneſs makes no change in the ſpecies, then this Krake muſt be of the Polypus kind, notwithſtanding its enormous ſize. All that I have further to add is this, that were we to credit the old vulgar opinion, concerning a Fiſh that had power to ſtop a ſhip under full ſail, we may conclude it is impoſſible that it ſhould be that ſmall Fiſh, which from the fable is called Remora, and is not bigger than a Herring. I

A fable about the ſmall Fiſh Remora.

* Immo vero potius quod ſuave quippiam oleat. Græci ideo vocant μαχίτιν, hoc ſeculo Neapolitani Muſchardinum. Jacobus Dalecampius in Notis ad Plin. L. cit.

have one of theſe in my collection; it has a roughneſs on the head, ſomething like a file, with which ſome people are ſo ſimple as to imagine, that this little diminutive creature can perform the extraordinary operation mentioned above.

The learned jeſuit Gaſp. Schottus, in his Phyſica Curioſa, cap. xiv. has thoroughly examined into the nature and probability of this account; and has confuted the learned Kircher entirely in this point. Among other reaſons that are given for a ſhip's being ſtopt in her courſe in the middle of the ſea, tho' under full ſail with a good wind, which is an undeniable fact, he reckons the conflux of rivers from ſeveral places ſtruggling together to be one cauſe. This opinion has ſome probability, and that ſtrange effect is really owing to this cauſe in ſome places: but be it as it will, I am apt to think that the Kors-Trold, or Soe-Drawl, ſo much talked of by the ſailors, and which they reckon an evil ſpirit, can be no other than the Kraken, which, according to the deſcription given above, ſeems to be able with its arms, or horns, to bring about this ſtrange effect. Hence, perhaps, it is called, among many other names, by that of Anker-Trold; tho' I do not in the leaſt inſiſt upon this conjecture being true, but willingly ſubmit my ſuppoſitions in this, and every other dubious matter, to the judgment of thoſe that are better experienced. If I was an admirer of uncertain reports, and fabulous ſtories, I might here add much more concerning this and other Norvegian Sea-monſters, whoſe exiſtence I will not take upon me to deny; but do not chuſe, by a mixture of uncertain relations, to make ſuch accounts appear doubtful, as I myſelf believe to be true and well atteſted. I ſhall therefore quit the ſubject here, and leave it to future writers on this plan, to complete what I have imperfectly ſketched out, by further experience, which is always the beſt inſtructor.

CHAP-

## CHAP. IX.

### Containing an account of the Norwegian nation.

SECT. I. *The ancient inhabitants of Norway, the Celto-Scythians were driven out by, or incorporated with Aſers, or Aſiatics.* SECT. II. *Their mixing in later times with various European nations; their expeditions to other countries, even to America, before it was diſcovered by the Spaniards.* SECT. III. *Various ſtrange colonies come in, and are received in Norway.* SECT. IV. *The ſtature, ſtrength, and complexion of the Norwegians.* SECT. V. *Their genius, and expertneſs in various kinds of work, arts, and bodily exerciſes.* SECT. VI. *Their capacity for literature and improvements of the mind.* SECT. VII. *The qualities of their mind, their complaiſance, fidelity, and valour, which makes them quarrelſome of late years; their ambition and hoſpitality to ſtrangers.* SECT. VIII. *Great age that many of them live to.* SECT. IX. *Certain diſeaſes to which they are ſubject.*

### SECT. I.

AS I have hitherto endeavoured to deſcribe the natural ſtate of Norway, the climate, the animals, as quadrupedes, birds and fiſhes, which are peculiar to it, I ſhould now be glad to lay down my pen, having in a manner fulfilled my promiſe; nor is it convenient, in my preſent circumſtances, to proceed any further; for it was my intention at the beginning to ſtop here. I did not think it neceſſary, in a natural hiſtory, to treat of the inhabitants of Norway, their genius, cuſtoms, &c. but as theſe particulars may not be ſaid to exceed the bounds of a natural hiſtory, and ſome readers may be of opinion, that an hiſtorian who would give himſelf the trouble to deſcribe inanimate and irrational beings, in any particular country, ought not entirely to omit the nobleſt works of God; I mean the rational inhabitants of it, their qualities, nature, genius, manners, &c. I ſhall therefore give a ſhort ſketch of theſe, and leave it for others to enlarge on the ſubject, and correct the faults I may commit. However, I hope I ſhall be the more impartial, as I am not a native of Norway myſelf.

Firſt inhabitants of Norway were Celto-Scythians.

The origin of the Norwegian nation is a ſubject that I did not purpoſe to treat of, I ſhall extract what I have to ſay on this ſubject from Snoro, Sturleren, Thormodus, Torfæus, and Jonas Ramus, who give as full an account as can be expected in a

matter of ſuch obſcurity, which is filled, like the hiſtories of other countries, with confuſed accounts, and uncertain conjecture; what it amounts to in ſhort is this, namely, that the moſt ancient or firſt inhabitants of Norway left the country juſt before the birth of Chriſt, and incorporated with a ſwarm of Aſers, or Aſiatics, that came into the north, conducted by Othin, who made himſelf maſter of the firſt, or Celto-Scythian inhabitants. The Laplanders and Finlanders, are doubtleſs, the progeny of the ancient Norwegians, who then retired farther north, to that extenſive chain of mountains called Kolen, and to Lapland or Finmark, which extend on both ſides of thoſe mountains. There the deſcendants of the firſt Norwegians ſtill obſerve the manners and cuſtoms of their anceſtors; from which they deviate in nothing but in ſome little cultivation of their lands, and live chiefly by hunting, and procuring graſs for their rain-deer. Theſe animals ſupply them with food, cloaths, and covering for their huts, or tents, which they move, according to their liking, from place to place. Thus did the ancient Germans live, according to Tacitus; not to mention the patriarchs of old, who thus migrated, and changed their habitations in the eaſtern countries.

Theſe were baniſhed by Aſers or Othin's followers.

The Aſers, or Othin's followers, which moſt probably were driven out of Aſia by Pompey the Great, and ſpread themſelves to the north, as far as they found inhabitable countries; but did not envy the ancient inhabitants of Norway their retreat among the cold mountains of Kolen and Finmark, the eaſtern ſide of which was peopled, on the ſame motive, by fugitives from Sweden and Finland, near the Bothnic bay, who have given the country and people their name in common, as they had met with the ſame hard fate of being expelled from their country by the Aſers. It is uncertain, however, whether theſe two kinds of fugitives have coaleſced into one people; for to this day there is a difference in their language, and ſome Finlanders ſpeak Queenſk, or Quænſk, but what language that is I cannot ſay; but if I may be allowed to conjecture, I ſuppoſe it to be the language of the ancient Norwegians, who were united with the Finlanders from the Swediſh ſide.

The famous diſtrict Quænanger, in the manor of Nordland, where the fabulous Rudbeck ſuppoſes his Northern Amazonian, or female republic to have exiſted, and the rock Quinens, or Quenenſheide; and alſo Quinsfiord Quinens, or Quenens Elv, and Quendal in Liſterlehn; and likewiſe Quenſhagen in Laerdal, are well known. There is a famous diſtrict in Sandhordlehn, now a pariſh, called Queenherret (corruptly Quindherred, from a groundleſs tradition, that all the men were killed there) which preſerves, perhaps, the memory of the name which the ancient Norwegians, or part of them had bore, like their baniſhed countrymen in the mountains of Kolen, who are ſtill called Queener, and the language the Queeniſh. If Thore, the father of Nor, who is ſaid to have given our country the name of Norway, as the Norwegian chronicles tell us, was king of Gothland, Finland, and Quenland; this laſt, I think, muſt have been Norway, tho' moſt authors think this country is ſituated near Findland, or at the end of the Bothnic bay. Quener, an ancient people.

It is very juſt with regard to the later Finlanders according to Arngrimus's Crymographia, L. II. fol. 214. and particularly by Thorm. Torf's Hiſt. Norw. p. 1. Lib. 3. Cap. XXIV. p. 160. where he ſays, "Naumudatos Halogia in Norvegia provinciam verſus orientem excipit Jamtia & illam Helſingia ſequitur Quenjatum Finnia." We ſee by this, that the Queners are placed next to the Helſingers, and Jamters, not far from the borders of Norway. It is not improbable therefore, that thoſe ancient Queners which were expelled by the Aſers, tranſplanted their name there with their colony, and much later, namely, in King Hagen Magnuſſen's time, by ſpreading have ſtraggled again back croſs the mountains of Kolen, to viſit the land of their anceſtors. They did not come indeed like friends; for the hiſtory of the aforeſaid king ſays, that Quener, and Kyrialer, perhaps Kareler, made an incurſion into Nordland, and particularly into Helyeland, perhaps ſpirited up by the tradition of their anceſtors being expelled from that country. If this conjecture (for certainty is not to be expected in the hiſtory of thoſe ancient times) ſeems as probable as any other, it anſwers to the remark made on their name, by Gerh. Schining, in his treatiſe lately publiſhed, called the Geography of ancient Norway; where the word Quenes or Quener, according

cording to Sect. II. p. 29. is said to signify a fugitive, or an unsettled people. However, that ingenious author is not of my opinion, by his seeking for their ancient habitation in Biarmeland, or the Russian province of Samojeden, supposing that they retired towards the Bothnic bay *. But the sound of a Name, in my opinion is not sufficient to establish the truth of history. Which of these conjectures is best founded, appears from the Iceland, and other monuments collected by the learned Thormodus Torfæus, who has cleared up this point, by shewing, that tho' the Asers partly expelled, and partly united to them the Idigenæ, or ancient inhabitants of the North, who were comprehended under the extensive names of Celtæ, Cimbri, and Goths. These received the language and manners of the Asers, and began to cultivate the lands, and to forsake their ancestors more simple way of living. In the mean time, they were not all willing to submit to this great reformation and the many new customs introduced, which the vulgar generally reject without examination in all ages.

The ancient Celtæ were called Keltrings.

There was no other means left for such than to look out for habitations farther to the north, towards Finmarken, whither the Finlanders had retired before. Those that remained behind, and obstinately persisted in the old customs, and wore the ancient dress, were looked upon as aliens, and called Keltrings, i. e. the descendants of the Celters, or Celtæ. This is the derivation of that despicable name given us in the Nova Litteraria Maris Baltici et Septentr. ad Ann. MDCXCIX. mens. Jun. in a letter from that great antiquarian Ottho Sperlingius, a Norvegian by birth, to the Lubeck collectors of the said journal, a few words from which I shall introduce on the credit of the said author.

" Asa quippe in septentrionem venientes miseram hanc vitam censebant, quam Celtæ priores incolæ ducebant veteris simplicitatis

* John Schefferus in his Lapponia, Chap. VI. p. 46. is very uncertain of the origin of the Fin, and Laplanders, and is of opinion, that they cannot be derived from the Russians, Swedes, or Norvegians; because the stature of their body is less, neither are they so corpulent, and their complexion, and hair dark brown, which is the reverse of the other northern people. But this argument seems to me of no great weight, because as the children of Adam, we derive our origin from one country. But by length of time, and difference of climates, are become very unlike one another, both in size and complexion, for the extreme cold in which the Fin-Laplanders live, in the frigid zone, does not only obstruct their growth, but likewise makes their complexion dark as well as hot climates, which M. Buffon demonstrates in his natural history, T. III. p. 527. and again in sect. 3.

memores; unde non mirum in ſeptentrione Celticum nomen penitus deletum eſſe, cum nemo Celtis amplius ſimilis eſſe vellet, ſed omnes, ut Aſæ, magnificentius vitam inſtituere cuperent. Hinc in Landnama Saga, libro de origine Iſlandorum ſcripto, P. III. c. 10. p. 102. Varo their ſua vel buner, ad menn bugdu ad Aſer verò thar kuammer, i. e. Tam bene veſtiti erant ut exiſtimarent homines, Aſas illuc adveniſſe. Hinc Aſas quoque vix homines ſed Deos potius credebant eſſe, atque Othinum ſuum inde Helgi As ſanctum Deum et magnum Aſam vocarunt, &c.---Talem igitur faſtum cum præ ſe facerent Aſæ et Aſiatici in his regionibus, Celtæ ut mendicabula quædam hominum haberi cœperunt, et ab Aſis Keltringer ideo dicti fuerunt; quod vocabulum, apud Danos eſt adhuc in uſu, ſic enim mendicos et viliſſimos quoſque hominum vocare pergunt. Terminatio ſane vocis ing, ſignificat talem qui a Celtis prodiit ut Ungling dicitur qui ab Ingo deſcendit. Skioldinger, qui a Skioldo, Lodbrookinger qui a Regnero Lodbrok rege, ita Keltringer illi dici cœperunt Aſis, qui a Celtis non ab Aſis exierant, &c.'

Agreeable to this account of the deſcendants of the ancient diſtreſſed Celtæ or Kelters, particularly in Denmark, perhaps one might with as good a foundation, or at leaſt with ſome probability, ſuppoſe that the Queners driven ſo far north, after uniting with the Bothnic Finlanders, or Fænner (for they are alſo called Fennones et Fannones who had been alſo expelled by the Swedes) gave riſe to the nickname Fanter amongſt us. 'This name we apply to a vagabond, idle ſett of people, who ſtrole about the country, and who live by begging, cheating, and thieving; not unlike thoſe we call Tartars in Denmark, Zieguener in Germany, Egyptians in France, and Gipſies in England. But though I am willing to give up this ſuppoſition relating to the Name; yet I believe that the ancient inhabitants of Norway, who would not ſubmit to the more poliſhed manner of living, the new dreſs, and the cultivation of lands, were baniſhed the country. I am confirmed in this by what Mr. Peter Högſtrom, who lived a great while amongſt the Fin-Laplanders, informs us in his deſcription of Lapmark, Chap. II. ſect. 3. that the Fin-Laplanders inſiſt upon it, that their anceſtors were proprietors of all Sweden, but were expelled, and by degrees were confined within very narrow limits, juſt as the Amorites forced the children of Dan into the

Finlanders, and Fin-Laplanders.

mountains, and would not ſuffer them to come down into the valley. Judges xxxiv. which the ſaid writer admits of. This author agrees with us in this Hypotheſis, namely, that they were the firſt that took poſſeſſion of thoſe parts after the flood *.

We may farther learn from the Norvegian chronicles, that thoſe ancient inhabitants which were expelled, had particular kings, or chiefs who preſided over them, beſides the kings of Norway to whom they were tributaries; for Mr. Jonas Ramus in the life of king Hagen the Great, informs us, "that thoſe of Finmark, had for a long time neglected to pay thoſe taxes which they ought to have paid to the kings of Norway. On this account, king Hagen ſent Giffer Galde, an Icelander, to Finmarken, who executed his commiſſion ſo well, that Morten, king of the Finns went in perſon to king Hagen, who was then at Nidros, and there paid him the taxes as he was in duty bound, and gave farther aſſurances of his fidelity and obedience. Hiſt. of the kings of Norway, p. 304.

Morten king of the Finns.

## SECT. II.

The more modern Norvegians, like the reſt of the northern nations, were a mixture of the remaining Celto-Scythians, and the new race of Aſers, or Aſiatics, who ſpread and ſtrengthened themſelves, by a more civilized manner of living, † ſometimes under the government of one, and ſometimes of many kings. Theſe both before and after chriſtianity was introduced, but chiefly in the tenth century, under king Harold Haarfager, who ſuppreſſed all the petty kings, and conſequently, raiſed many malecontents, ſent ſeveral colonies out of the country to inhabit Iceland, Greenland, Færorne, Hetland, and the Orkneys.

Of the tranſmigrations of many Norvegians into various countries in different parts of Europe.

* Gerhard Schoning, in the ancient Geography of Norway, ſays, Sect. 3. p. 5. "That they formerly in the ſouthern and weſtern parts of our Peninſula, have been ſo numerous, that they ſent colonies to the Daniſh iſlands, and that Feyen took its name from them (viz. Finns.) The great Hugo Grotius is of this opinion, and that they muſt have been the oldeſt, and at firſt the only inhabitants of Norway and Sweden, and have ſince been driven by the anceſtors of the preſent inhabitants who came from Germany, to the moſt barren parts of the North, as the ancient Britons were forced by the Anglo-Saxons to leave England, and retire into Wales.

† See Chap. x. Sect. 1, 2, 3. A ſimilitude in the Norwegian Peaſants manner of living, and the Georgians, may perhaps ſtrengthen the tradition, that the Aſers, or followers of Othin were Aſiatics, and particularly that they were Mountaineers expelled by Pompey the Great, from Caucaſus, and Ararat, betwixt the Euxine, and the Caſpian-ſea.

* Not

* Not to mention their many warlike expeditions to Scotland, England, and Ireland, France, Portugal, Spain, Sicily, Calabria, Greece, and the eaſt. Of theſe powerful and fortunate expeditions Thorm. Torfæus gives an account at large. An extract of the moſt important of them is to be found in Geſtæ et Veſtigia Danor. extra Dan. Tom. I. et II. In Chriſt. Reitzer's dedication of Thormodus Torfæus Hiſt. Rerum Norvegicar. to king Fred. IV. where he briefly ſpeaks thus: "Leges hîc quales quantique illi fuerunt tui majores. Videbis Haraldos, Olafos, Magnos, Suerreres, Haquinos, et fateberis, illos in fortitudine prudentia ſanctitate ne celeberrimis quidem quos habuit antiquitas regibus ceſſiſſe. Quid? quod imperitabant genti ex qua tot fortiſſimi viri, tot prodiere Heroes, digni certe quos ne neſciat unquam orbis quam ingentia eorum fuerint facta, quæque ſudore ſuo et ſanguine adepti ſint decora, æternus annalium colat honos. Hæc enim illa gens, quæ olim ſimul cum tuis Danis, ſub nomine Normannorum, per omnem fere, qua claſſibus adiri queat, Europam, victricia arma circumtulit. Hæc gens, quæ toti illi, quod Norvegiam, Britanniamque et ſeptentrionalem Americæ oram interluit, mari jura poſuit; inſulas omnes coloniis complens, chriſtianamque ſimul mox cum novis his colonis inducens religionem. Hinc Rolfus ille Neuſtriæ domitor, qui non pedibus magis quam victoriis, disjunctiſſimas pervagabat terras. Hinc Tancredus, cui in privato domo quot filii, tot fere etiam, inaudito per omnia ſecula exemplo, futuri naſcebantur principes: virtute ſola apud exteras nationes quæ, ad poſteros etiam tranſmitterent, imperia facturi. Hinc regis Magni Nudipedis filius Sigurdus, qui in Hiſpania, devictis terra marique Saracenis, exactis Sicilia Mauris, adſerta Chriſtianis Syria ac Palæſtina, Aſiam, Africamque et Europam admirationis ſua fama conjunxit. Hinc denique ut reliquos omnes taceam, magnus ille Angliæ rex Wilhelmus Conqueſtor, &c."

It will not be improper here to give an account of an extraordinary ſea-expedition of the Norwegians to North-America, tho' but little known. This country is now poſſeſſed by the French,

The Norwegians ſail to the Weſt-Indies long before the Spaniards.

* In the London Magazine of June 1725, we are informed that the inhabitants of theſe laſt mentioned iſlands, which in fact are alienated from Norway, ſtill talk the Norwegian dialect; many of the people, eſpecially in the more northern iſles, ſpeak the Norze, or corrupt Daniſh, which, in ſome places, is the firſt language their children learn.

and

and is very advantageous to them, becauſe of their great fiſheries there, to the loſs of the Norwegians. This country, by the right of prior poſſeſſion, might have, ex jure primi occupantis, ſtill belonged to the latter, if their anceſtors had exerciſed more lenity towards the natives: and it is not improbable that ſome of the deſcendants of the Norwegian colony, are to be found there at this day.

Upon inquiry, it ſeems plain to me (tho' it might appear improbable at firſt view) that the Norwegians had ſailed to America, many centuries before the Spaniards, and that this voyage was performed by thoſe Norwegians who were ſettled in Iceland and Greenland. It may, in ſome meaſure, ſatisfy the curioſity of thoſe that have been long enquiring into the poſſibility and manner of peopling that part of the world, by the deſcendants of Noah *, to ſhew how practicable it was for theſe northern nations. This may be ſeen by the following account, of the Norwegians ſailing to the ſouth-weſt from Greenland to Vinland, which could have been no other than America. I ſhall here inſert the words of that ingenious Icelander Arngrimius Jona, in his hiſtory of Greenland, chap. IX and X. from page 43 to 52, "Herjolf an Icelander. and his ſon Biorn, uſed annually to travel from place to place, trading with various ſorts of merchandize. But while Herjolf was once in Norway, he formed a ſcheme of going to live in Greenland, which he accordingly put in execution, and ſettled at Herjolfnæs, which lies on the eaſt-ſide of that country. When Biron returned to Norway, and heard that his father was gone to Greenland, he would not ſo much as caſt anchor there, but rather choſe to go in queſt of his father in the ſtrange and remote parts of Greenland. Though he had nobody on board that knew any thing of the courſe they were to ſteer, nor had ever been that voyage himſelf, he ſet ſail without compaſs or pilot, which appears plainly by this hiſtory. It is ſaid that he judged of the points of the compaſs by the courſe of the ſun, and

Arngrim. Jona's account of it.

* The poſſibility of this diſputed point might be proved, by ſuppoſing that the American continent was anciently joined to Europe and Africa; for Plato relates in his Timæus, that the Egyptian prieſts told Solon, the Athenian lawgiver, who lived about 600 years before Chriſt, that in old time, beyond the Straits of Gibralter, there was a very extenſive country called Atlantis, larger than all Europe and Africa, which was ſwallowed up by a great earthquake, and only left its name to the Atlantic ocean.

by what he had heard of the country, he gueſſed at what point it lay. So bold and adventrous were the ancients. The firſt three days he was at ſea, he ſteered his courſe weſtward, then the wind chopt about to the north, and as they did not know their courſe, they were driven to the ſouthward. When the north-wind had done blowing, and they had ſailed about twenty-four hours, they ſaw land at a diſtance. When they approached nearer to the coaſt, they found it a flat and level country, free from rocks, and very woody. They landed there, and then put to ſea again, and ſailed from thence to the north-weſt, and before they made Greenland, they ſaw two iſlands, which they paſſed in their courſe. The following ſummer, in the year of Chriſt 1002, Biorn ſailed to Norway, and informed Erich Jarl, who then reigned there, that he had ſeen two unknown iſlands in his voyage, but had not landed upon them. This did not pleaſe the king, who blamed Biorn becauſe he could give no better account of thoſe iſlands which he had ſeen. Upon this he ſailed from Norway to Greenland a ſecond time.

Leif, ſon of Erich Rode, was reſolved to tread in his father's ſteps, who firſt diſcovered Greenland, and therefore did not let thoſe iſlands mentioned above, remain long unknown. He accordingly determined to ſet ſail in a ſtout ſhip with thirty-five men, under his father's direction, who was then an old man. But as Erich Rode was riding with his ſon, in order to embark, his horſe fell with him, which he looked upon as an ill omen, and therefore turned back and went home; however, Leif purſued his voyage. The firſt land that he diſcovered was the laſt that Biron had ſeen, and the neareſt to Greenland; here he caſt anchor, and went aſhore, and found nothing but flat ſtones and ice in the country, but no graſs or herbage; from theſe ſtones he gave it the name of Helleland. He afterwards ſailed from thence and diſcovered the other iſland that Biron had ſeen. This was an even level country, without any rocks, and very woody; the ſand on the coaſt was remarkably white. Leif gave this country the name of Marckland. They ſailed from thence and ſteered their courſe to the ſouth-weſt, with a north-eaſt wind, and diſcovered a third country in forty-eight hours, which they thought preferable to the others. Near the north part of this country, they found a ſmall iſland, where they landed; from thence they ſailed weſt-

ward, round a point of land into a ſmall harbour, and run the ſhip into a creek.

This country appeared to them to be very agreeable and fertile, which induced them to winter there. Beſides all other kind of fiſh which the ſea and freſh-waters afforded in great plenty, they found there a very large kind of ſalmon. The winter was not ſevere, nor was there ſo much froſt and ſnow as in Iceland or Greenland, and they could ſee the ſun full ſix hours in the ſhorteſt day. They likewiſe found both vines and grapes, which the Greenlanders had never ſeen before; but they had a German with them, who was no ſtranger to that ſort of fruit, and ſaid he was born in a country where great quantities of vines grew. Leif ſtayed there all the winter, and returned to Greenland in the ſpring, giving this country the name of Viinland *.

Leif found theſe countries, viz. Helleland, Markland, and Vinland, uninhabited at his arrival; but this is denied by the next adventurers who ſailed to the ſame countries. Thorvald, Leif's brother, was the next that made a voyage to Viinland, with thirty men, and wintered where his brother Leif had been before, and lived in the ſame huts that he had built when he wintered there. During the winter Thorval reconnoitred the weſtern part of the country, and in the ſummer following he took a ſurvey of the eaſtern part. The third ſummer he viewed all the iſlands to the weſtward, which were uninhabited. His ſhip was damaged, by running a-ground on a large promontory, ſo that he was obliged to repair it there. He found that the keel had received ſome damage, and turned his veſſel bottom upwards, at the extremity of that promontory, which they therefore called Kiælarnæs, in Daniſh Kiolnæs. In ſearching the eaſtern parts, they gave names to many places, rivers, &c. One place they called Kroſſanas, or Kaarſnas, which ſhall be taken notice of hereafter.

Not far from thence they diſcovered three ſmall boats, which they called Hudkeiper; there were three men in each boat; of theſe every third man was aſleep. Their manner of building

* That ancient writer, Adamus Bremenſis, takes notice of the voyage to Viinland in the following words, which he heard king Swend Eſtridſens relate by word of mouth: "Præterea unam adhuc inſulam recitavit, a multis repertam in illo oceano, quæ dicitur Winland, eo quod ibi vites ſponte naſcuntur, vinum optimum ferentes; nam & fruges ibi non ſeminatas abundare non fabuloſa opinione, ſed certa Danorum comperimus narratione." Adam. Bremenſ. lib. de ſitu Daniæ, p. 36, edit. Elzevir.

veſſels

veſſels in thoſe ancient times is entirely unknown at preſent; they were made of ſkins and ribs, or bones, which they tied together with twigs. Theſe kind of boats they called Hudkeipa. They killed eight of theſe men, but the ninth eſcaped. Soon after they found prodigious numbers of the inhabitants coming towards them, who with their bows and arrows ſhot at the Greenlanders. By this Thorvald was convinced that this was not a barren unpeopled country. Theſe people were formerly called Skrælinger. Myritius, who calls them pygmæos bicubitales, ſays, that they are a few weak, deſpicable wretches, that have no ſtrength or courage. He alſo calls them Skrælingers; and adds, that they live to the weſt of Greenland; that if they were ever ſo many in number there is not much to be feared from them. However, we find that in the year 1379, a party of the Skrælingers made an excurſion into Greenland, and murdered eighteen of the Chriſtian natives of that country.

But to return to our hiſtory of Thorvald; whilſt this multitude of Skrælingers diſcharged ſhowers of arrows into the veſſel, the Greenlanders defended themſelves with boards, with which they covered the veſſel, faſtening them together with twigs, ſo that hardly any of the crew were wounded. In a very ſhort time the Skrælingers began to be in want of arrows, and then retired all together, without doing any farther damage.

Thorvald was the only perſon who ſuffered in this attack, for he received a wound in the cheek, of which he died. He was buried on a point of land, where, by his deſire, they erected two croſſes, one at his head the other at his feet, and from that, this point was called Kroſſanæs, or Kaarſnæs.

Thorvald ſeemed to know ſomething of his approachihg end; for he was very fond of that point of land, and ſaid that he deſigned to remain there. They ſtaid the remaining part of the winter on Viinland; in the ſpring they loaded their ſhip with vines, and the boat with grapes, and ſailed back to Greenland in good condition. The third ſon of Erich Rodes, and brother to Leif and Thorvald, whoſe name was Thorſten, ſailed from Greenland with his wife and children, and all his family, in all twenty-five perſons, with an intent to fetch his brother's corpſe, in order to interr it in his native country. But meeting with contrary winds,

he was driven back again to Greenland, to a place called Lyſefiord, it being very late in the autumn, where he, as well as moſt of his people, died of the plague. During the winter their bodies were put into cheſts and preſerved, and in the ſpring they were all carried to Erichsfiord, and decently interred.

Thorſten's wife, whoſe name was Gudrid, ſurvived him, and afterwards married an Icelander, who was called Thorfin Karlſefne, and was but lately come to Greenland from Norway. This Thorfin was perſuaded by his wife and others to go to Viinland. Accordingly he ſet ſail with ſixty men, beſides his wife and five other women. He alſo took with him as many heads of cattle as he could ſtow in the ſhip, and had the liberty of living in Lief's houſe, for it was not given him. He arrived ſafe at Viinland, where there was no ſcarcity of any thing neceſſary to ſupport life; for beſides plenty of fiſh, and the fruits of the earth, they found a large whale driven upon the ſhore, of the ſort which they call reid-whale; of this kind ſome have been found near two hundred feet long, and their fleſh taſtes very much like beef. Beſides all this, it was a pleaſant fertile country, and afforded plenty of graſs, ſo that a bull they had brought with them grew ſo wild and untractable with high keeping, that they could not manage him.

In this manner they lived by themſelves till Chriſtmas, when the Skrælingers approached them in great numbers with their commodities, which conſiſted of hides, ſkins, and furs; but when they ſaw the bull, and heard him make ſuch a terrible bellowing, they were ſo terrified that they fled with great precipitation to their houſes, and in their hurry to get in, broke open ſome of the doors. The Greenlanders did not underſtand their language, nor they the Greenlanders; but, by ſigns and motions, they underſtood that the Skrælingers were come to trade with them, and choſe to have iron and arms in exchange for their furrs. Thorfin forbade all his people to ſell them iron, but gave them milk and other food, which the Skrælingers ſeemed very fond of, and preſented him with ſeveral valuable things in return for their good cheer.

When they were gone, Thorfin ſet about boarding his houſe all round with thick planks. All this happened during the firſt year of their reſidence in that country.

The following ſummer the Skrælingers came again to Thorfin in Vinland, and one of them was killed for attempting to ſteal an ax from the Greenlanders. Upon this the reſt went away, without reaping any great advantage from their furrs, or other commodities.

The third ſummer they came again without any goods, and prepared for war, but had no ſucceſs, having loſt a great many of their men. There was one inſtance happened, which diſcovers thoſe people to be very ignorant and ſtupid; one of them laid hold of an ax which the Greenlanders had careleſly dropped, and being deſirous to know the uſe of it, by trying an experiment, ſtruck one of his companions on the head with it, with all his might. This being obſerved by one of their company, who ſeemed to be ſuperior to the reſt, and was probably their chief, he took the ax and examined it; then he went down to the water-ſide, and threw it as far as he could into the ſea. By this we may judge, that they do not know how to uſe any other inſtrument but their arrows.

At the expiration of three years Thorfin left Vinland, in order to viſit his mother-country, and carried many valuable things with him. After this expedition ſeveral adventurers, both from Iceland, and Greenland, took a fancy to go to Vinland. Two men who were called Helge, and Fimboy, ſailed firſt eaſtward from Iceland to Norway, and from thence to Greenland, where a woman, whoſe name was Freidis, perſuaded them to go to Vinland. They accordingly ſailed thither in two of their own ſhips, with ſixty men, and the aforeſaid Freidis, who was ſiſter to Leif, and had lived in his houſe whilſt he was in Vinland. But when they had been there but a ſhort time, thirty of them were deſtroyed by the deceit and perfidy of that wicked woman. And tho' ſhe was daughter to Erich Rode, and Leif's ſiſter, ſhe was ſtill far from reſembling them in their virtues; for ſhe was envious, proud, and the moſt abandoned of her ſex.

The above-mentioned Thorfin, went from Greenland to Norway, and was held in great eſteem and reſpect for his Vinland-expedition; and when he was going to depart for Iceland, and juſt ready to ſail, he met with a foreigner from Bremen, who deſired him to ſell him a piece of timber that he had in his poſ-

ſeſſion, to put up in his houſe as an ornament: But Thorfin would not unleſs he would pay him its weight in gold: upon theſe conditions he ſold it him at laſt. It ſeems the wood was called mauſur (makholder baum, or Ruſcus meuſdom, muſe-træ) and had been brought from Vinland. Hieronymous Tragus, ſays, that no rats, mice, or bats, will come near this wood." So far Arngrimus Jona.

A Norvegian colony in all probability ſtill left in America.

As I have ſaid before, it is not in the leaſt an improbable ſuppoſition, that the deſcendants of a Norwegian colony ſhould ſtill be found in the ſaid country; and I ground my hypotheſis upon what that eminent jeſuit, Pere Charlevoix, very plainly intimates in his travels in America; he tells us, that he found on the iſland of Newfoundland, a people with beards, complexion, and every mark of a different nation from the reſt of the inhabitants called Eſquimaux (a name, without doubt, which the French have given them) which he reckons is an European colony; his words are theſe, " Les Eſquimaux reſemblent autant aux Patagons, que le pays qu'ils habitent reſſemble aux cotes du detroit de Magellan. C'eſt un peuple feroce qui mange la chair toute crue des animaux. Leurs yeux ſont petits, leurs cheveux blonds, leur peau eſt aſſez blanche, et ils ont de la barbe. Toutes ces marques les diſtinguent de tous leurs Voiſins, et pourroient faire croire, qu'ils ſont une colonie d'Européens, qui ont degeneré par la miſere et par le manque d'inſtruction. Hiſt. et deſcription generale de la Nouvelle France, &c."

It is a pity, that the good father Charlevoix had not ſo much knowlege of the Norvegian language, as to have been able to examine whether his ſuppoſition were true. I am apt to conclude, that he would have found them to be deſcendants of the Norvegians, who, by length of time, and long abſence from their country, or want of ſhips, or elſe by their own choice, had remained there, and forgot their native land, yet ſtill retaining the ancient Norvegian dialect, ſuch as the Icelanders now ſpeak. It is not probable, that he would have found any ſigns of chriſtianity among them, for their departure happened much about the time that chriſtianity was introduced into Norway, which occaſioned many colonies leaving the country, excluſive of thoſe that did it for reaſons of ſtate. Others left their native land out of deteſta-

tion

tion to the cruelties which king Olaus Trygonis exerciſed upon his ſubjects, who, according to the cuſtom of thoſe times, and the principles of the popiſh ſpirit, endeavoured to propagate the chriſtian religion, or rather a mere hypocritical profeſſion of it, by force.

Since I wrote the above account, I happened to caſt my eyes upon a book, entitled, A General Account of the Continent of America, and its Inhabitants. Publiſhed this year, with a preface by Doct. Siegen, Jac. Baumgartens. This work treats more largely of the people I have mentioned above, their difference from the other Americans, and their foreign original in P. I. C. I. p. 27. and ſeq. ſect. 13. in theſe words; "The nation of the Eſkimaux, which inhabit the country from 52 to 60 degrees of north-latitude, between Hudſon's bay and the ſtrait of Belleiſle, ſeparating the continent of Labrador from Newfoundland, have ſuch peculiar cuſtoms, agreeing ſo little with thoſe of the other Indian nations of America, nay their form is ſo different from the reſt of the inhabitants of this part of the world, that I believe we ſhould not err, if we were to derive them from a quite different origin. They are tall and better made than the other Indians; they have curled hair, which they clip off at their ears, and let their beards grow.

Their hair is generally black, though ſome of them have light coloured, and others have red hair, like the inhabitants of the northern parts of Europe.

The name Eſkimaux ſeems to be derived from the word eſkimanſic, which in the language of the Abenaques, implies men who eat fleſh raw. For as the inhabitants of this country live by hunting and fiſhing, they eat the game they kill, and the fiſh they catch, raw and bloody, without any preparation. The neighbouring Indians give them another name, which ſignifies fugitives or run-aways, not becauſe they are cowards, but on account of their briſk, active, turbulent, diſpoſitions.

They live in a conſtant diſtruſt of their neighbours, and are continually upon their guard againſt any incroachment, avoiding as much as poſſible all commerce with other nations. Some affirm, that this nation proceeds from ſome Biſcaians who were ſhipwreck'd with ſeveral veſſels in theſe parts; if this be true,

they are conſequently, derived from that very European people they had afterwards ſo great cauſe to complain of. Nevertheleſs, if we may judge by their manners and cuſtoms, I am convinced that their origin is of a much more ancient date. I rather think, that they came ſome ages ſince from the Britiſh and Orkney iſlands.

If there were not ſtill ſome remains of idolatry and ſuperſtition, without the leaſt ſign of chriſtianity amongſt them, we might perhaps aver, that they are deſcended from thoſe Cambri, which forſook Wales, to diſcover new countries in the weſt, about the end of the twelfth century, under the command of Madoc their prince, a ſon of Owen Guynedd, mentioned by David Powel, in his hiſtory of the Cambri; if this voyage of Madoc be not fabulous." So far the anonimous author of the hiſtory of the country and inhabitants in America. His hypotheſis, that the ſaid Eſkimaux are derived from Europeans who came there ſome ages ago, I think we cannot but believe to be true. To make Biſcayans, or Britons of them, who have been converted to chriſtianity ſo long, of which there muſt without doubt have remained ſome footſteps, does not at all agree with facts. Upon the whole, all hypotheſes on this ſubject are at an end when we read ſome of our good Norvegian authors, eſpecially Arngrimus Jona quoted above.

Many conſiderable colonies have gone away at the latter end of the fourteenth century from hence, as well as from other countries, and a great many were carried off by an epidemical diſtemper that raged at that time, which the Norvegians called ſorte dod, or black death. By this means the country has been greatly weakened and ſtrip't of its inhabitants in many places. However, later times have recovered this loſs, ſo that the old habitations are again occupied, and new ones added to them. Hence we may ſee the benefits of peace, and what advantages it brings to a country. That it conduces to the increaſe of the inhabitants, may be concluded by examining theſe laſt thirty years peace; for the increaſe of people is ſo obvious in this dioceſe, and in all probability in other places, that moſt of the farm-houſes which formerly had but one family, now have two, three, or four. To this we may add the great numbers of young ſeafaring men,

who, by permiſſion, and with proper paſſes, and a great many without paſſes, go every year to Holland and other countries to ſerve as ſailors, and when theſe are compleat ſeamen, they are preferred to all other; all theſe together make a much greater number than one would imagine.

## SECT. III.

Colonies of ſtrangers in Norway.

On the contrary, there are many foreigners who come into Norway, and ſometimes ſettle there, particularly Daniſh, Engliſh, Scotch, Dutch, and Germans. The firſt of theſe, who are univerſally called, both here and in Sweden, Jyder, have frequent opportunities to come here, ſome to be put in places and employments under the government, others are drawn hither by mercantile affairs, eſpecially ſince the union of Calmar, which has incorporated theſe two nations into one, profeſſing the ſame religion, ſubject to the ſame government, and ſpeaking the ſame language*. Since that time they may be looked upon as one people, according to the account Virgil gives of Æneas's uniting the Auſonians and Trojans in one nation:

> Sermonem Auſonii Patrium moreſque tenebunt,
> Utque eſt nomen erit, commixti corpore tantum
> Subſident Teucri, morem rituſque ſacrorum
> Adjiciam, faciamque omnes uno ore Latinos.
> Hinc genus Auſonio miſtum, quod ſanguine ſurget,
> Supra homines, ſupra ire Deos pietate videbis.

Upon what terms theſe two nations, equally great and free, have been united, may be ſeen amongſt other curious pieces in Arild. Huitfeld's collection, Tom. II. p. 1316, where there is inſerted an old letter, ſubſcribed by two ſenators, at a diet held in Bergen, anno 1450, in which are theſe words: "Both kingdoms, Denmark and Norway, ſhall henceforth be united in brotherly love, in trade and friendſhip; and neither of them ſhall be ſubject to the other; each kingdom ſhall be governed by its own natives, &c." The Norwegian nation is as much beloved in

* I mean by the ſame dialect the language of the Aſers, which the three northern kingdoms, and part of Germany, had in common; but by degrees varied, ſo that they could not underſtand each other, as is the caſe of the Icelanders now, whom we cannot converſe with: and there is ſtill here many hundred words uſed by the common people, that we do not underſtand, of which there is a proof in the Gloſſarium Norvagicum. Since the union of Norway and Denmark, the laws concerning divine ſervice, have produced a greater change in the language.

Denmark, as the Daniſh is in Norway, and both are regarded with the ſame affection and favour by all our monarchs, particularly thoſe who have reigned ſince the ſovereignty has been free, and had an opportunity to diſcover their impartiality, and natural diſpoſition, whatever the envious Conringius or others might have inſinuated to the contrary. This is demonſtrated in a treatiſe by the worthy Dr. C. L. Scheid, which may be ſeen in the Tranſactions of the Royal Academy of Sciences at Copenhagen, Tom. II. N° x. p. 317. edit. Lat. inſcribed, Chriſt. Lud. Scheidii Diſſ. de Pervetuſta et illibata Norvegiæ libertate, qua cum ante, tum poſt unionem Calmarienſem, gaviſa eſt, cui accedit demonſtratio quod regnum hoc neutiquam Daniæ, provinciæ inſtar, ſubjectum et conſociatum ſit. Ex principiis juris publici univerſalis.

Concerning the obligations of both nations to brotherly love and unity, Chriſtian Reitzer, in his dedication of Thorm. Torfæus's hiſtory of Norway, to king Frid. IV. writes thus: "In hoc mutuo noſtro amore, in hac, qua per tot ſecula cohæſimus, admiranda plane concordia, nil poteris illis conferre, ut non et nos obliges. Illi noſtri ſunt fratres, illi ſocii fœdere æterno Daniæ juncti. Illis iidem, qui nobis, ſunt mores; eadem lingua, eadem religio. Eodem gloriamur rege. Præſtitum nobis eſt, quicquid preſtitiſti illis," &c.

The Engliſh. "When king Oluf Kyrre, towards the end of the eleventh century, founded the city of Bergen, and was particularly intent upon extending the trade and commerce of Norway, he granted the Engliſh very great privileges, and gave them a convenient place to build upon."

Theſe privileges their deſcendants enjoyed near 300 years, till the year 1312, when they fell upon king Hagen's people, upon which they were transferred to the Germans who came in their room, and carried on a conſiderable trade there. However, ſome of the Engliſh remained in ſeveral of the ſea-ports, and there, as it is reported by a continued tradition, built the firſt churches, and were the apoſtles or firſt inſtructors of the Norwegians in the
The Scotch. Chriſtian faith. The ſame may be ſaid of their neighbours the Scots, who have viſited theſe parts rather oftner than the Engliſh, being ſituated nearer to the Norwegian-coaſt. A great number of them have ſettled here, eſpecially in Hordeland, which is now called North and South-Hordlehn. Thoſe peaſants about Bergen, diſtinguiſhed

tinguiſhed by a particular dreſs, and by way of diſtinction called Strile-farmers, are thought to be of Scotch extraction, and a great many Scotch and Engliſh families employed in the mercantile way, are ſettled here at Bergen. Theſe are ſtill diſtinguiſhed by their names; and a diſtrict in Rye-Kirkens-Sogn, called Skotte-Byen, or Scotch-town, is a farther proof of this. There are likewiſe in Foſſen, now called Chriſtianſand, which has the privileges of a trading-city, a great many Engliſh and Scotch families ſettled, who carry on a great trade. I obſerved above, that the Germans, about the beginning of the fourteenth century, ſucceeded the Engliſh in their trade, privileges, and advantages. Theſe they enjoyed as long as the Hanſe-treaty was in force, and Bergen was one of the principal towns of this aſſociation. Theſe Germans piqued themſelves upon the privileges that were granted them, and behaved with a great deal of inſolence, making a bad uſe of them by encroaching upon the inhabitants, particularly by joining with the mechanics of their country. By this means they became very numerous, and conſtituted a formidable body of ſeveral thouſands, till king Frid. II. deputed Mr. Chriſtopher Walkendorf to chaſtiſe them, who immediately damped their courage, and ſet them their proper bounds.

At this preſent time the Germans have but little ſhare of the trade of the country, and are but few in proportion to their predeceſſors; for tho' the Nordland-company have as great trade as ever, yet out of fifty-eight houſes which were formerly inhabited by German families, who belonged to that company, there are now but four in their poſſeſſion; all the reſt are bought up by the natives, who, partly in the company's compting-houſes, and partly at their own houſes, carry on the trade, which formerly enriched a great many foreigners.

It ſhewed a great want of judgment and policy in thoſe times, to permit foreigners thus to engroſs the whole trade of the country *. Even at preſent there are in this city betwixt four and five hun-

* I have obſerved, that ſome of our own as well as foreign authors, have conceived a very wrong idea of this German-company, which they have conveyed to others, by repreſenting it in a declining condition, or almoſt bankrupt; but the truth is quite the reverſe, in regard to the trade of the company: Their houſes, ſtock, ſervants, and the number of traders, are the ſame as heretofore. As for the fiſheries, God be praiſed, they are more flouriſhing than ever. That at Sundmoerſke is as large again as it was formerly: but it may be ſaid very juſtly, that its dependance upon the German Imperial cities, ſuch as Bremen, Hamburg, Lubeck, Roſtoc, is

hundred merchants families, above half of which are Germans or Dutch; but have been naturalized long ſince. There is another German colony in one of our towns up in the mountains, called Kongſberg, where they have divine ſervice performed in their own language, as it is at the company's houſe at Bergen. There is ſtill a more ancient colony of this nation, which came here in the reign of Chriſtian III. the fate of which I have related above in my deſcription of the ſilver-mines in Norway, ſee Part I. p. 181.

Tartars. J. Ramus gives us a ſhort account of a Tartarian colony that fled from their own country and ſettled here, in the reign of king Hagen Hagenſen, which he relates in the following words, in page 231: "In Senniens Lehn, there is a place called Malangerfiord, which in the reign of king Hagen Hagenſen, was given to a certain people to ſettle in, who had fled from Tartary to Biarmeland, and from thence came to Norway. King Hagen cauſed them all to be baptized, and gave them leave to ſettle in Malangerfiord," &c.

## SECT. IV.

I ſhall now proceed to the chief point I had in view in this chapter, namely, to give an exact deſcription of the Norwegians, their genius, manner and qualities, both of body and mind. Tho' the outward aſpect is ſeldom regarded as the principal endowment in any civilized nation, yet as it firſt ſtrikes the eye, I ſhall begin with obſerving, that the Norwegians are in general of a good appearance, tall, well made, and lively. There are ſome who pretend that there is a difference in the inhabitants of Norway according to their ſituation; and obſerve that the peaſants who live among the mountains, are generally taller than the reſt, and have a certain ſeverity in their countenance which commands re-

is declining, and grows every day leſs and leſs. In fact, they have but a ſmall portion left, ſince the warehouſe-trade, &c. has been by degrees bought up by the natives, to whom it belongs by natural right. This company poſſeſſes the beſt part of the city of Bergen. Their ground extends all along the weſt-ſide of the haven, and is in length 340 paces, and 120 in breadth, containing thirty large houſes, the fronts of which look towards Garpe-Bridge, or the German-Bridge, and form a ſtreet. In the ſame row are the compting-houſes, oppoſite to theſe is the place where the fiſh-dealers are always at work. They are continually buſied in packing, loading, unloading, &c. eſpecially in May and Auguſt, when the Nordland veſſels come in by hundreds at a time, beſides a great many foreign Ships. Each compting-houſe has ſeparate apartments, and are properly factories, having their ſeparate œconomy conducted by a maſter who has his clerks and ſervants, that are moſtly Germans, but in the ſervice of the Norwegians. No women are ſuffered to be in the compting-houſes, according to ancient cuſtom, by which they are all regulated to this day.

28. The Dress of the Boors in the province of Bergen in Norway.

ſpect, and ſeems expreſſive of the ſtrength of their intellectual faculties. Along the coaſt the people, for the generality, are not ſo tall and robuſt, but on the contrary more corpulent and phlegmatic, and have a rounder viſage. This difference is obſerved by the officers in the militia, according to the ſeveral diſtricts of which their men are natives, and when they draw up their regiments, conſiſting of both ſorts, they can pretty well gueſs to which claſs each belongs *.

That the firſt inhabitants of Norway had ſome of the giant-kind amongſt them, is aſſerted by Thormod. Torfæus, who is not very credulous in other reſpects, in his Hiſt. Norv. p. i. l. iii. cap. 3 & 4. p. 117. His words are, "Edda nihil operoſius tradit, quam quæ Aſis tranſmigrantibus cum gigantibus iſtis interceſſerunt. Sed & hiſtoria Hervoriava, cap. 1. conceptis verbis opponit iſtorum gigantum nomina, qui inter primos ſeptentrionem incoluerant--Primos Daniæ incolas Saxo Grammaticus gigantes, gigantes Arngrimus primos Norvegiæ agnoſcit: illos autem poſteros fuiſſe & reliquias Cananæorum agro Palæſtino, a Joſua & Calebo, divinis auſpiciis in Palæſtinam moventibus, expulſorum, circa annum mundi 2506. Hancque orbis plagam, ad ea uſque tempora, aut forſitan diutius, prorſus incultam manſiſſe exiſtimat, Genebrandi authoritatem allegans . . . cui licèt Pontano vel maxime repugnante, Hiſt. Dan. p. 55. ſuffragatur Rabbi David Kimki ad finem Abdiæ, qui Cananæos ex agro Palæſtino ab Hebræis ejectos, in Illyricum & Panoniam migraſſe tradit, citante Bodino. Meth. Hiſtor. cap. iv. Accedit Meſſenius, qui tomo I. Scandiæ illuſt. a Joſua Palæſtina ejectos Scandiam intraſſe exiſtimat . . . Celeberrimus antiquitat. ſeptentrionalium profeſſor, Olaus Verelius, ſolos gigantes hunc tractum quondam incoluiſſe, creditu arduum judicat, adjecta ratione his verbis: not. ad cap. I. hiſtor. Hervorianæ, p. 11. Neque enim, inquit, è terra hic potius quam alibi prognati ſunt, ſi vero aliunde advenerunt, aliorum injuriis hic pulſi dicentur & . . . . vero, proinde ſimilius eſt, gigantes hic quondam

Torfæus's opinion of a giant-kind.

* L'air & la terre influe beaucoup ſur la forme des hommes, des animaux, des plantes: Qu'on examine dans le même canton, les hommes, qui habitent les terres elevées, comme les coteaux, ou le deſſus des collines, & qu'on les compare avec ceux qui occupent le milieu des vallées voiſines, on trouvera que les premiers ſont agiles, diſpos, bienfaits, ſpirituels; & que les femmes y ſont communement jolies; au lieu que dans le plat pays, où la terre eſt groſſe, l'air épais, & l'eau moins pure, les payſans ſont groſſiers, péſans, malfaits, ſtupides, & les payſannes toutes laides. Buffon hiſt. naturelle, tom. iii. p. 203.

fuiſſe, at non ita magno numero, ut ſoli illi terram occupaverint."

If all this be probable, which, however, I leave to the reader's own judgment, then we may ſuppoſe that there has been ſuch a thing as a ſlow and gradual decline in the ſize of the human race amongſt us *. Some of our later hiſtorians give us inſtances of heroes of uncommon ſize, ſtrength, and courage, in Norway, particularly the renowned Harald Haarderaade, who diſtinguiſhed himſelf in Greece, and is ſaid to have been ten feet high. To this we may add ſeveral human Skeletons, that have been dug up in the mountains of an uncommon ſize, but as I have never ſeen any of them, I cannot vouch for the truth of the accounts concerning them. Not to mention Starkadi's tooth, which according to Thorm. Torfæus's account, p. i. l. 10. c. 28. p. 454, is ſaid to have been uſed for a bell-clapper; and Eigel Skallegrimi's ſkull, which the ſame author, p. ii. l. 5. c. 6. p. 213, ſays, was ſhewed in Iceland as a prodigy, both on account of the largeneſs and weight. It was ſaid to be ſo hard and thick, that it could not be chopp'd through with an ax. And not long ago, Mr. And. Weſſel, at Biornoer in the dioceſe of Tronheim, opened one of thoſe ancient tumuli called giant-graves, and found there a human back-bone of a prodigious ſize. All theſe accounts I ſhall leave to reſt on the credit of the relators. But waving theſe ſtories, it is certain the Norvegians are a very ſtrong, robuſt, and hardy people, and, in ſome meaſure, differ according to the ſituation they live in. About the rocks and cliffs, and in moſt parts of Norway, eſpecially on the mountains, the air they breathe is freſh, clear, and wholeſom; their plain and homely diet, their continual labour, which they are obliged to undergo both by ſea and land, and their cheerful diſpoſition, which is natural to moſt of the Norwegians, give them a conſtant ſeries of health; ſo that, I believe, a greater number of them, than of any other nation, exceed the age of a hundred years. But of this I ſhall take notice hereafter. They are inured to cold and hardſhips from their childhood; for, in the latter end of November, they will run about bare-footed even upon the ice. The mountaineers,

Strength and hardineſs.

* Commiſti noſtri generis hominibus hybridas procrearunt, ſemigigantes verè vocatos. Hi in mores & manſuetudinem humanam, feritate paulatim miteſcente & proceſſu temporis evaneſcente, tranſierunt. Thorm. Torf. Hiſt. Norv. p. i. l. iii. c. 2. p. 115.

who daily go in the woods, have their beards often full of iſicles, and their boſom filled with ſnow: and when their naked breaſts are occaſionally expoſed, they ſeem to be as hairy as their chins. On my travels over the higheſt mountains of Norway, which are covered with ſnow, where horſes are of no ſervice, I have ſeen the peaſants, in great numbers, do the work of horſes, and indeed they ſeem almoſt to equal thoſe animals in ſtrength. I have obſerved, that when they have been in a profuſe ſweat, they have thrown themſelves every half hour upon the ſnow, to cool and refreſh themſelves, and have even ſucked it to quench their thirſt. All this they undergo without the leaſt apprehenſions of a cold or fever, and without murmuring, or betraying any diſcontent. On the contrary, they go on ſinging merrily all the while, and hold out for nine hours together at the hardeſt labour imaginable, with incredible cheerfulneſs and alacrity. What ſtrong conſtitutions are the fiſhermen and ſea-faring people in this country endowed with, by that wiſe and gracious being who giveth to every one what their reſpective wants require! A remarkable inſtance of this may be ſeen on the iſlands near our coaſt, and thoſe we call the out-iſlands; where the peaſants of both ſexes aſſemble together by hundreds, I may ſay thouſands, about the middle of January, to make their winter-harveſt of the rich produce of the ocean. At theſe times every family takes with them five or ſix weeks proviſion, chiefly dried fiſh, and keep out at ſea all day, and a great part of the night by moonſhine, in open boats; and after that crowd together by ſcores into little huts, where they can hardly have room to lay themſelves down in their wet-cloaths. Here they repoſe themſelves the remainder of the night, and the next morning they return to the ſame laborious employment, with as much pleaſure and cheerfulneſs as if they were going to a merry-making. Even the weaker ſex is not exempt from theſe hardſhips any more than the men; but the women have not beards in common with them, as Adam Bremen pretends to ſay, in his book de ſitu Daniæ & reliquarum, &c. page 29. This ſeems of a piece with what he ſays of the Norwegian men in the ſame page, namely, that they live in woods, and are hardly ever ſeen. His words are, "Audivi mulieres eſſe barbatas, viros autem ſilvicolas, raro ſe præbere videndos." The hair and eyes of the Norwegians are lighter than that of moſt other nations;

nations; and a dark complexion is as rare here as a fair complexion in France or Italy. We ſee that the cold changes, hares, partridges, and moſt of the Norwegian animals, from a dark or brown colour, to the fineſt white. We have the following obſervations concerning the fair complexion of the Norwegians, in the Hamburg Magazine, tom. I. p. 48. "Farther from the æquator the black colour of the inhabitants is gradually loſt; they are ſtill pretty brown above the tropics; but we meet with none that are entirely white till we have gone a great way into the temperate zone, and at the extremities of theſe zones we find the faireſt complexions. The *blonde*, or flaxen complexion of the Daniſh women, ſtrikes the eye of the admiring traveller, and he can ſcarcely believe that the female he now beholds, and the African he lately caſt his eyes upon, are of the ſame ſex.

Car. Linnæus, in his Fauna Suecica, obſerves, that the northern people have generally light grey, or blue eyes, as well as light-coloured hair, page 1. "Gothi corpore proceriore, capillis albidis rectis, oculorum iridibus cinereo-cæruleſcentibus." But in the mean time, tho' John Iſaac Pontanus, in his Hiſt. Dan. pag. 777, makes it common to all the people that live north of the Baltick, we may ſay, that there is no rule ſo general as to be without an exception; and therefore it is only to be underſtood with ſome limitations, which Pontanus muſt mean: but if it implies all the nations north of the Baltick, then he muſt have forgot, that north of the Swedes and Norwegians, there is the Lapland nation, which differs greatly from them in manners, cuſtoms, and language. They are of a leſs ſtature, have a flatter viſage, and, in particular, a dark brown complexion and black hair. This ſhews, that where the temperate zone terminates, and the frigid commences, there the inhabitants loſe their fair complexion, and grow darker, as exceſſive heat darkens the ſkin, and gives the inhabitants of the torrid zone a tawny complexion. Hence we ſee, that two oppoſite cauſes, namely, extreme cold, and exceſſive heat, in this reſpect produce the ſame effect *.

* Lorſque le froid devient extrême, il produit quelques effects ſemblables à ceux de la chaleur exceſſive. Les Samoyedes, les Lappons, les Groenlandois, ſont fort baſanez. On aſſure même, comme nous l'avons dit, qu'il ſe trouve, parmi les Groenlandois, des hommes auſſi noirs que ceux de l'Afrique. Le froid comme le chaud, doit deſſecher la peau, l'alterer, & luy donner cette couleur baſanée. Buffon. hiſt. natur. tom. iii. p. 527.

The cold in Norway and Sweden by no means obſtructs the growth of the body, which is obvious, by the compleat ſtature of the people of thoſe nations; but the Laplanders, Greenlanders, and Samoiedes, are all a ſhort, thick-ſet race, of a dark brown complexion, which is certainly occaſioned by the cold, that is very intenſe in their climate.

## SECT. V.

Qualites of the mind.

To repreſent the genius, or diſpoſitions of the minds of a whole nation, has its difficulties, and is liable to many exceptions. However, nobody will deny (what daily experience ſhews to be true) that every nation is, in ſome degree, characteriſed and diſtinguiſhed by its particular air, nouriſhment, education, and manner of living.

Ingenuity.

Having premiſed thus much, I ſhall enquire into the mental qualities and genius of the Norwegians. They are generally dextrous, briſk, penetrating, and ingenious, eſpecially in all kinds of mechanic performances. This may be ſeen by the peaſants never employing any hatters, ſhoemakers, taylors, tanners, weavers, carpenters, ſmiths, or joiners; nor do they ever buy any goods in the towns: but all theſe trades are exerciſed in every farm-houſe. They think a boy can never be an uſeful member of ſociety, nor a good man, without making himſelf maſter of all theſe.

In ſhort, the peaſants of no country are ſo dextrous at every thing as thoſe of Norway, and our good neighbours the Swedes; where they have much the ſame method of educating their children. But it is true, however, that theſe dabblers in ſo many trades ſeldom excel in any one branch; but it is ſufficient that they perform well enough for their purpoſe *. Many of theſe polypragmatic peaſants bring their work to ſuch perfection, that it is hardly diſtinguiſhable from town-made goods. At Hardanger, not far from hence, there are ſeveral young country fellows who make their own violins; and ſome of them are ſo good, that

* How ingenious a great many of theſe Norwegian peaſants are in building of ſhips (which they do only by imitation, without any rules) may be concluded by the numbers that are built at Arendal, and other places; ſome of theſe are from two to three hundred laſts burden, fit for the Aſiatic trade, and that company has bought ſome of them for that purpoſe. At the aforeſaid Arendal there is frequently built four or five of thoſe large ſhips in a year, and many ſmaller veſſels.

I have been aſſured, they are fit to play upon in concert. But what their genius moſtly leads them to, is carving in wood all manner of devices with their Tolle-knive, being a ſhort broad knife, which is alſo of their own forging; ſometimes their performance turns out ſo well as to be worthy of admiration, tho' they do it without the help of any rules in the art of drawing. Amongſt others, in the beginning of this century, a peaſant who lived near Bragnæs, whoſe name was Halvor Fanden, excelled in this art; the connoiſſeurs would give their weight in ſilver for his carved cups, and other works in baſſo relievo. And in the Royal Muſæum, they are look'd upon as their greateſt artificial curioſity. Ol. Jacob in Muſæo Regio, p. 46, ſpeaks of him in theſe words, "Canthari, pocula, pyxides et vaſcula plurima, ex acere, quibus figuræ variæ elegantiſſimè inciſæ, opere et ingenio ruſtici Norvegi in diſtrictu chriſtianenſi prope Bragnæſium, qui Halvor Fanden appellatus. Ruſticus hic fuit, et ſolius cultelli ope id in ligno, aliaque materia præſtitit, ut artificibus aliis, vel ſolertiſſimis, palmam præripuerit. Nec ſculptura ſaltem et cælatura, verum et architectonica, fabrili, muſica et ſutoria arte inſignis fuit, et ex parte omni polydædalus. Filios quoſdam reliquit, artium paternarum ſectatores, quorum plerique et fidibus ſciunt, et inſtrumenta omnia muſica conficiunt; imo artem pictoriam, ſculptoriam, capſulariam, fabrilem, architectonicam, venatoriam et plures alias callent." In the ſame Royal Muſæum, there is to be ſeen a buſt of Chriſtian V. carved in a certain wood called been-wood, by a ſhepherd, who in the year 1688, when the king went to Fronheim, ſtood in the road to ſee his majeſty paſs, and received ſo ſtrong an impreſſion of his face, that he was able to repreſent every lineament and feature to the life, without having ever ſeen the original but once en paſſant. What the Norwegian genius is capable of when aſſiſted by education, and proper inſtructions in the art of ſculpture, the three great maſters Berg, Bog, and Arbin, can witneſs; whoſe merits are ſo well known, that they need no encomium.

I ſhall in the next place, give the reader ſome account of the bodily exerciſes uſed by the Norwegians.

Formerly the Norwegian youth, not only amongſt the common people, but alſo amongſt thoſe in a more elevated ſtation, were trained up to wreſtling, riding, ſwimming, throwing the dart, ſcating,

ſcating, climbing ſteep rocks and forging iron. The other part of their education conſiſted in writing the Runic character, blowing the horn *, and compoſing ſongs, and odes. Hence king Harald Haardraade, ſpeaks thus of himſelf;

" Ithrottir kan ek attæ,
Ygs fet ek lid at ſmida,
Fæur er ek huaſt a heſti,
Hefik ſund numit ſtundum,
Skrida kan ek a ſkidum
Skyt ek ok ræk ſue at nytir,
Tho lætr gerær i gordum
Gollrings ved mer ſkolla.

Noble exerciſes in former times.

Which is thus tranſlated by Wormius, " Exercitia octo novi, ſtrenuè dimicare audeo, equo viriliter inſidere valeo, aliquando et natare conſuevi, in ſoleis ligneis currere novi, jaculandi et remigandi arte bene polleo, attamen virgo Ruſſica me ſpernit.

Rognauld Kolſon, count of the Orkneys, writes thus of himſelf and his arts.

" Taſt em ek aurr at ofla
Ithrottir kan ek niu
Tyni et tradla runum
Tid er mer bok og ſmider
Skrida kan ek a ſkidum
Skyt ek ok ræ ſua nytir
Huort veggia kan ek huggin
Harpſkatt ok brog thætta.

i. e. Ludum ſcacchicum exercere promptus ſum, exercitia novem calleo, novi exarare litteras runicas, aſſuetus ſum libro et arti fabrili,

* Next to ſounding the horn, which is a kind of hautboy, they have a muſical inſtrument, which the Norwegian farmers call lang-leek; this has ſix braſs wires ſtretched upon a ſounding board about four feet long, and ſix inches broad; the ſound of which will hardly pleaſe a delicate ear; but the peaſant prefers it to a ghittar, or lute. But the violin is the inſtrument moſt admired by our peaſants, and is ſometimes made uſe of in theſe parts not very ſeaſonably, I mean in the houſe of mourning, where they will ſit at the head of the coffin playing all day long, perhaps to drive away melancholy. They do the ſame when the corps is carrying to church in a boat, which is frequent in the weſtern parts. But this is not ſo ſtrange, as an old and ſuperſtitious cuſtom in ſome places in the dioceſe of Chriſtianſand; where they aſk the dead perſon why he died? if his wife was not kind to him? or his neighbours civil to him? in ſome places in Lardal in the dioceſe of Bergen, every one that comes into the room where the corps is, falls on his knees at the coffin, and begs forgiveneſs from the deceaſed if they have ever offended him. The reverend H. C. Atche, has told them that it is very fooliſh, and too late to aſk forgiveneſs at ſuch a time, but he can hardly break off ſuch an inveterate cuſtom.

in ſoleis ligneis currere novi, jaculor et remigo, convenienter utrumque teneo fidibus canere et carmen componere. Vide Ol. Wormii, Litterat. Rimica, Cap. XXIII. p. 129.

There were other exerciſes formerly practiſed in Norway, which are thus deſcribed in Snorro Sturleſen's Norvegian Chronicles, pag. 166, et ſeq. "King Olaf Tryggeſen, was ſtronger, more alert, and nimbler than any man of his time. He could climb the rock Smalſerhorn, and fix his ſhield on the top of it, &c. He would walk without the boat on the oars while the men were rowing. He would play with three darts at once, toſſing them up in the air, and would always keep two up, and one down in his hand. He was ambi-dexter, and could uſe his weapon with both hands, and throw two darts at once; he excelled all his men in ſhooting with the bow, and in ſwimming he had no equal. In a word, he was cheerful, jocoſe, and affable; he was humble, obliging and good-natured, and was expeditious in all his undertakings, &c. Sigmund Breſteſen, uſed to practiſe theſe exerciſes with the king, namely, ſwimming, ſhooting, climbing the rocks, and all other manly exerciſes which heroes and warriors practiſed in thoſe times; and none could come ſo near the king in all theſe, as Sigmund."

## SECT. VI.

The capacity of the Norwegians for literature, is not inferior to their ſkill in mechanics and bodily exerciſes. Had they had the ſame opportunities for improvement as their neighbours have in Denmark, they would make an amazing progreſs. We may judge of this by the children in Norway, who take their learning extremely faſt, and are capable in a very ſhort time to get a book by heart, and to comprehend the meaning of it; eſpecially ſince ſchools are upon ſuch a good footing, God be praiſed, as I have every where found them on my annual viſitations, with equal joy and ſurpriſe. This advantage the peaſants here enjoy preferable to their equals in moſt other countries, namely, a lively and penetrating genius, fit for great and noble enterprizes. This I aſcribe, next to the fine clear air they breathe, to the agreeable reliſh and pleaſing ſenſation the mind feels in a ſtate of liberty; which they enjoy without interruption, free from ſlavery, vaſſalage, and all obligations to foreign ſervices. Every Norvegian peaſant, eſpecially

the freeholder that can pay his taxes, governs his houſe and poſſeſſions with as much power and authority as a nobleman; nobody directs or controuls him. This gives them a certain freedom and generoſity of mind; and if the liberal arts, as I mentioned above, had here ſuch encouragements, as in ſome other countries, I do not doubt but that they would make a very great progreſs in a ſhort time; and amongſt an equal number of any other nation, our Norwegians would undoubtedly be found of a ſuperior genius, to adorn the republic of letters. As a proof of this I will appeal to the writings of ſome of our moſt eminent authors, whoſe works are partly printed and partly in manuſcript, ſuch are Arctander, Aſlac, Berndſen, Bielcke Borck, Brinck, Brunſmand, Camſtrup, Cold, Daſs, Ewertſen, Engelbrecht, Faſting, Gunnerus *, Hagerup, Heitmand, Herſleb, Holberg, Juel, Kraft, Kragelund, Ramus, Schoning, Sperling, Spidberg, Undalin, &c. not to mention a great number of very learned Icelanders whom I do not take notice of here, though they are of Norwegian extraction. It is true we have not in Norway, according to the German ſaying, ſo much Schul-witz or learning, as Mutter-witz or natural-genius. Of our poſſeſſing the latter there cannot remain the leaſt doubt with thoſe who have converſed with the Norwegians; for their brains are not frozen up, as the ignorant may imagine, but rather like the air they breathe, clear and penetrating. We find by experience, that thoſe who live fartheſt up the country, near Tronheim, are the moſt ingenious †. If one enters into converſation with a Norwegian peaſant about any ſpiritual or temporal affairs, that may come

* This Norvegian, born in Chriſtiania, at preſent Mag. Legens, at the univerſity of Jena, is reckoned by many learned people to be one of the greateſt metaphyſicians and philoſophers in this learned age, which appeared particularly in the year 1748, when he publiſhed a demonſtration of the exiſtence of a God, and the unity of his Being; correcting and amending the ſyſtems of thoſe who wrote before him on this important ſubject, with great modeſty and ſtrength of reaſoning. He ſhews them how deficient their arguments are to confute Atheiſts and Sceptics. See C. Evon Windheim Gottings Philoſoph. Biblioth. vol. 1. p. 299, and particularly p. 324, where one of his adverſaries writes of him thus: "I think they have with juſtice ranked Gunnerus among thoſe profound philoſophers who have left the others far behind,"

† Meanly they ſeek the bleſſing to combine,
And force that ſun, but on a part to ſhine,
Which not alone the ſouthern wit ſublimes,
But ripens ſpirits in cold northern climes;
Which from the firſt has ſhone on ages paſt,
Enlights the preſent, and ſhall warm the laſt.

POPE'S ESSAY ON CRITICISM.

within the circle of their knowledge, and require only natural parts to comprehend, one ſhall find them provided with judicious and pertinent anſwers. Their queſtions are generally clear and rational, and their anſwers diſcover great penetration, and knowledge ſuperior to many who have had all the advantages of education.

## SECT. VII.

Politeneſs. Another good quality obſervable in the Norwegians is civility, and a courteous behaviour, being very obliging and willing to ſerve others. In this they do not fall ſhort of the politeneſs of the French, for they reſemble them more than any other nation; the return they have for it, from the undiſcerning, is much the ſame as the French meet with. For it is generally thought that where there is ſo much complaiſance, there is little ſincerity; and many foreigners doubt whether the Norwegians civil words, looks, and proteſtations, are ſincere. 'Tis true, the laſt are often as little to be depended upon here as in other countries, and the greateſt profeſſions of friendſhip ſometimes require the greateſt caution. But ſtill it is found to be true in general, that the Norwegians civil and obliging deportment, ought not to make their ſincerity and honeſty ſuſpected: Their behaviour is not affected, but quite natural to them, and may be looked upon as the particular genius of the nation. The Norwegian peaſant, in point of politeneſs, exceeds the Daniſh Burgher; and the Norwegian Burgher, eſpecially of the mercantile claſs, in this reſpect, equals at leaſt the Daniſh Nobility. As for fidelity and honeſty, I think, I have not found them leſs practiſed here than in other countries; but this I muſt ſay, that where ſuch a good principle is diſcovered, it requires in the perſon who poſſeſſes it, a double caution to guard againſt the ſubtle ſchemes of the crafty and deſigning.

Fidelity.

But in general the Norwegians are a faithful honeſt people *, and their fidelity to their ſovereign ſhewed itſelf remarkably towards the king, of whoſe throne they have been found to be the main ſuport.

* And even Moleſworth cannot help praiſing the Norwegians, in this and other reſpects, in theſe words: "The inhabitants are a hardy, laborious, and honeſt ſort of people." Account of Denmark, c. iii. 3. p. 28. It is a double commendation to be commended by a man that only excels in ſcandal.

Experience, which is the beſt inſtructor, has remarkably ſpread the fame of their conduct in war, and inteſtine broils, which have put their duty and fidelity to the teſt. But as clear as this point is, it ſtill would be much more conſpicuous, if the account of all their wars and expeditions were collected, and the memory of their great actions preſerved. As a further proof of their valour, and fidelity to their king and country, I will only add an inſtance or two that happened in the laſt war, though well known. I mean the zeal of thoſe citizens that ſet fire to their own houſes to diſlodge the enemy; and of the peaſants who diſperſed themſelves about in the rocks and defiles, with their fire-arms, to cut off their retreat, and did not ſuffer them to paſs without being remarkably weakened. But, omitting ſeveral other particulars, I ſhall only briefly relate what the late commander in chief, lieutenant-general Von Lutzov told me as an inſtance of the fidelity of the Norwegians. In the year 1716, when the Swediſh army had invaded Norway, and whilſt one of the governors of a fortification on the frontiers, was lying near a navigable river, with his corps, which was greatly weakened, waiting for freſh tranſports from Denmark, there came a number of grey-headed farmers to him, and offered themſelves, with all their accoutrements, as volunteers for his majeſty's ſervice. Such zeal and willingneſs gave him the greateſt hopes of a ſucceſsful attack. There came one day, particularly, a body of 300 ſuch volunteers from Tellemarken, who were vigorous, and in good ſpirits, with fire-arms and three weeks proviſion in their knapſacks, and accoſted him thus: "Good day, father, we hear you have got ſtrange unwelcome gueſts that you want to get rid of; if you have a mind to make uſe of us, only tell us what we muſt do, and you ſhall ſee that we are men." It was theſe peaſants who were commanded by captain Coucheron in the action of Krog-wood, when the Swedes endeavoured to force a paſſage through, and were repulſed with the loſs of 200 men; but the Norwegians, who were well poſted, did not loſe a man. Many inſtances of the like are confirmed by the following inſcription, to be ſeen on one of our Norwegian medals. Valour.

Mod, troeſkab, tapperhed, og huod ſom giver ære,
Den heele verden kand blant norſke klipper lære.

Courage,

i. e. Courage, fidelity, valour, and every thing that is praiſe-worthy, all the world may learn amongſt the Norwegian mountains.

Valour, united with fidelity, has been, from the greateſt antiquity, the characteriſtic of the Norwegians. Sturleſſen and Torfæus have almoſt filled the ancient chronicles with accounts of the great exploits and heroic atchievements of the Norwegian kings and nobility, and even of common men; ſometimes laying other countries under contributions, and ſometimes nobly defending themſelves, and preſerving their liberty from uſurpation, tyranny, and oppreſſion *.

In general, the inhabitants of the mountains have an advantage in that reſpect; for it ſeems as if the hard and rugged rocks, which they have continually before their eyes, inſpired them with a contempt of dangers and difficulties. The great number of beaſts of prey ſeen in thoſe parts, oblige them to carry arms betimes, which they know how to handle from their childhood. They are inured to troubleſome and fatiguing journeys, and ordinary coarſe diet ſerves them as well as the moſt delicate food. The condenſed cold air towards the pole, braces up the fibres, cloſes the pores, and keeps in the internal heat. Hence they are,

" Et gens dura pati, & fortiſſima ſternere docta."

Good ſeamen.

The ſkill of the Norwegians in maritime affairs is well known; they chiefly excel at ſea, to which they have moſtly applied themſelves, and where they have acquired the greateſt glory. Even in theſe later times, we have had great heroes at ſea; and Heinſon, Adeler, and Fordenſkiold are deſcended from theſe. They have a genius for all warlike employments, and bodies and conſtitution well adapted for the ſame, and are not eaſily

* Ea regio robuſtiſſimos educat viros, qui nullâ frugum luxuriâ molliti ſæpius impugnant alios, quam impugnentur. A multis retrò ſeculis, partim inopia adacti, partim freti viribus quæ facilè faciunt mortales inſoleſcere, mare Britannicum diu tenuêre infeſtum. Nonnunquam ſoli, aliquando Danis juncti, Britanniam & Gallias ſunt populati, nec quievêre donec de ſuo nomine Normandium in littore Galliarum conſtituerent. Albert Crantzius in prologo Norvegiæ. Concerning the Danes and Norwegians partaking of the honour of the great exploits of thoſe people, which all the old annals call Normannos, ſee Thormod. Torf. Hiſt. Norv. p. i. l. i. c. viii. & in præfat. where he ſays, " Satis teſtantur quanta jam inde à prima hominum memoria, gentis Norvegicæ potentia, quanta in ore omnium celebritas fuerit. Ut non diffitear interdum Norvegis, ſive ut à quibuſdam ſcriptoribus dicuntur Normannis, ea adſcribi, quæ à vicinis Danis fuêre præclarè geſta, quemadmodum, vice verſâ, his à nonnullis attribuuntur quæ ab illis, extra patriam, edita glorioſa facinora in vulgus innotuerunt."

repulſed, but will ſupport the honour of their nation, and undergo the greateſt fatigues with very little reſt or nouriſhment. Olaus Magnus calls the Norwegians, " durum & indomabile genus bellatorum, ob ingentem animi & corporis ferocitatem, & animoſitatem, ac etiam propter duriſſima exercitia, &c. . . . Acre genus hominum nullis bellorum aſperitatibus cedens. Hiſt. ſeptentr. lib. vi. præfat. p. 180 *.

Quarrelſomneſs.

What a pity it is that this natural courage and valour ſhould degenerate, in ſo many of our people, to a diſpoſition for fighting and quarreling among themſelves, when the common enemy does not call upon them to exert it. The many parties and factions, in ancient times, are glaring inſtances of this unhappy diſpoſition. Theſe ran in the blood from one generation to another, and brought on inteſtine wars which ruined their country. Such were the Bagler, Birke-beener, Breed-ſkægger, Varbelger, Slitunger, and Rib-bunger; their origin, views, and actions, are to be ſeen at large in the civil hiſtory of this country. There we may learn, that they had valour, courage, and fidelity to their ſovereign, but always diſcovered a turbulent and revengeful diſpoſition. Even the common peaſants would ſtand upon their point of honour, and fight it out with their knives; and before they began, they would hook themſelves together by the belts, then draw their knives, and would not be parted till one or the other was mortally wounded, or killed. This brutiſh cuſtom prevailed in Norway till about the middle of the laſt century, to ſuch a degree, that they ſay, when a peaſant with his family was invited to a wedding, the wife generally took her huſband's ſhroud with her; becauſe, on theſe occaſions they ſeldom parted before they were intoxicated with liquor, the conſequence of which was fighting, and thoſe battles ſeldom ended without murder. Therefore the chancellor, Jens Bielke, ſtrove to the utmoſt of his power, to cruſh this quarrelſom ſpirit, and made an order, that every man ſhould deliver up his knife to proper officers as ſoon as dinner was over, and before they had drank to exceſs. But ſtill there were many ſo wicked as to provide themſelves with two knives. Very lately this abominable practice has appeared again in Lærdal, and ſeveral other places. Some of the peaſants

* The Norwegian army, at this preſent time, conſiſts of 30,000 effective men, beſides 14 or 15000 ſailors, ſuch as all Europe can hardly match.

who have put away the inſtruments and broke themſelves of this wicked cuſtom, ſtill retain that revengeful ſpirit, and that inſolence and pride which were the promoters of it. However, they make uſe of a leſs pernicious inſtrument, and employ the lawyer's pen inſtead of the knife. They are very obſtinate, and will perſiſt in their animoſities to the laſt; and if a poor man has it not in his power to purſue his ſuit, his neighbours will often make a collection to enable him to do it. This ſpirit of ſtrife and contention our Norwegians ſeem to have tranſplanted with their arms and colonies; for it is viſible at this day in the French province of Normandy, which was peopled by the Norwegians, and derives its name from them. The inhabitants of Normandy, are reckoned very litigious and full of chicane, and find employment for an incredible number of lawyers that abound in that province, according to the teſtimony of one of their own countrymen, whoſe words are as follows. See Buddæus's general hiſtorical lexicon, ad vocem Normandie. "The inhabitants in general are wiſe and ſagacious, but paſſionate. The common people in particular are apt to quarrel, and love to go to law, and the nobility are commended for their valour."

Crantzius deſcribes the Norwegians in general to be obſtinate, and not eaſily moved from their reſolutions, which I muſt allow. His words are, "Populus qui in rupibus ſuis induruit non facilè mobilis ab eo, quod ſemel apprehenderat. Ante Chriſtum agnitum, nulla gens pertinacior errorum, poſt ſuſceptam fidem Chriſti, nulla immobilior: ferunt aliquando terra ſua qualibet de cauſa peregrinatos, cum primum redierint terramque tetigerint, pronos cadere in terram, & facto ſigno crucis, eam in terris oſculari. O! inquiunt, terra chriſtiana ante omnes. Adeo generis ſui cultum attollunt, cæterorum contemnunt." Albert. Crantzius in Norveg. lib. vi. cap. ii. p. 754.

Ambition. The Norwegian peaſant is inſpired with a commendable ambition, which makes him ſtrive to live independent of others, and without being in any body's debt; and if his freehold be incumbered, he uſes his utmoſt efforts to clear and redeem it out of the hands of a ſtranger.

There are many peaſants who are not a little proud of being thought to be deſcended from the ancient nobility, and even the royal family. This ridiculous vanity, often prevents them from mar-

marrying their children very advantageouſly, by ſtanding upon their blood and birth. And if a thing once appears in the eyes of a Norwegian, either honourable or ſhameful, he does not heſitate a moment which to chooſe. For they are fond of being reſpected and honoured to the higheſt degree, and the great complaiſance, as I have before obſerved, which they ſhow to others, is not without a view of being paid again in the ſame coin. Their ambition was known to old king Hagen, who, according to Mathew Paris, was much preſſed by the king of France, to let his troops (which were deſtined for the holy war) join the French army; but he rejected it, ſaying, that each of the two nations was too proud to live in harmony together. The ſaid writer was the legate that brought the letter to the king, and according to his own account had this anſwer from his Norwegian majeſty.

" Grates refero copioſas piiſſimo Dom. Regi Francorum, qui meum deſiderat in peregrinatione ſodalitium, ſed novi in parte naturam Francorum, et ſicut dicit poeta, ego dico.

Omniſque poteſtas impatiens conſortis erit,
Omniſque ſuperbus impatiens conſortis erit.

Gens mea impetuoſa eſt et indiſcreta, impatienſque omnium injuriarum et moleſtiæ. Si ergo inter tales et ſuperbos contentio oriretur, uterque noſtrum irreſtaurabile damnum incurreret, &c." Vide Thorm. Torfæum. p. IV. l. 4. c. 38. p. 253.

From the ſame ſource ſprings the Norwegian's deſire to diſtinguiſh himſelf in his ſtation by fine cloaths, elegant houſes, &c. This is very conſpicuous in moſt of the trading towns, where commerce gives them an opportunity of converſing with foreigners, eſpecially the Engliſh, whom they chiefly endeavour to imitate; but for want of abilities to equal that nation in ſplendor, magnificent entertainments, furniture, and equipages, a great many ruin themſelves *.

But though the Norwegians endeavour to follow the Engliſh in theſe particulars, and in being conceited, and having a great opinion of their own country and nation, ſtill they are very unlike them with regard to friendſhip and hoſpitality. For I do not think, that there is any country in the world where the people are ſo hoſpitable, liberal, and willing to ſerve and oblige ſtrangers Generoſity.

* Our Bergen merchants who are moſt of them deſcended from the frugal Dutch, or Germans, continue ſtill in that plain way like good ſober tradeſmen.

as they are in Norway. A traveller is ſeldom ſuffered to pay for his lodging, which may partly proceed from the ſmall number that viſit theſe parts; therefore they think it a duty, to treat the ſtranger as well as it is in their power, and look upon it as an honour done them, if he accepts of their civilities. Notwithſtanding all this, the peaſant never gives the upper end of the table to the greateſt gueſt that ever comes under his roof, for he thinks that place belongs to himſelf only. They keep open houſe for three weeks at Chriſtmas, and ſet out the beſt things their houſes afford, the table being ſpread and loaded with victuals during the whole time *.

## SECT. VIII.

Health, and long life.

As the Norvegian contributes to the good and happineſs of others, ſo he alſo endeavours to make himſelf chearful, and always to appear good-natured. Envy and diſcontent are here baniſhed to the rich and great, whoſe temporal advantages are rather a plague than a comfort and happineſs to them. But the middling and common people who are the greateſt numbers in every country, and conſtitute the nation itſelf, are ſeen here chearful, and as happy as I believe in any country, excepting France. The little they have to indulge themſelves with, which ſhall be ſhown hereafter, reliſhes, and agrees with them, and they enjoy it though it be plain and homely; except in public companies and entertainments, where they are rather too much inclined to drink. But in their daily courſe they have no ſuperfluity, and therefore moſt of them arrive to a great age. Many to eighty or ninety, ſome to a hundred or an hundred and twenty years †.

* Iſaac Pontanus praiſes the Norvegians in this and other reſpects, in chorograph. deſcript. Dan. p. 697.

" Incolæ ſunt probi, ſine fuco ac fallacia exterorum amantes, et ſi qui alii hoſpitales. Et ſane olim quæ celebrata eſt Julio præſertim Cæſare Germanorum hoſpitalitas, ea velut hinc relegata hic adhuc locum tenet. Gratis enim peregrinantem excipiunt aluntque, is viciſſim, ſi quid forte refundat, non ut debitum, ſed ut benevolentiæ ac animi grati tecmerion accipiunt."

The Norvegian peaſant's hoſpitality extends itſelf ſo far on Chriſtmas-eve, as to invite the birds to be his gueſts, and therefore, he hangs out at the barn door on a pole, an unthreſh'd ſheaf of corn which draws the ſparrows and other ſmall birds thither, where they feaſt and make merry.

† In the year 1751, in the dioceſe of Aggerhuus only, a hundred and thirty-ſix perſons then had reached eighty years of age; there were beſides forty-one of ninety, and four of a hundred, and upwards.

I ſhall juſt mention ſome extraordinary inſtances of longevity recorded in hiſtory, which, however, I will not vouch for as unqueſtionable truth, but let them reſt on the credit of my authors.

J. Ramus, in p. 126, gives an account of Auden Evindſen, biſhop of Havanger, who about the year 1440, died in the two hundred and tenth year of his age; which, ſuppoſing the calculation to be true, is almoſt an unparallel'd example.

Another inſtance is more certain, namely, that of Adrian Rotker, who was ſeventy years alderman of Tronhiem, and died about the beginning of the laſt century, being a hundred and twenty years old, according to Gerh. Mittzovii Preſbyterolog, p. 34. Ramus tells us again, p. 194, of a miniſter at Holtaalen in the dioceſe of Tronhiem, whoſe name was Michel; this gentleman before the reformation in the year 1535, was employed by the archbiſhop to collect ſubſidies for king Chriſtian II. and lived to be a hundred and fifty years old, being thirty years blind. His ſucceſſor, the Reverend Mr. Andrew Bernhoft, who was his curate four years, and died in the year 1666, lived alſo to an uncommon old age. Perhaps the air of Holtaalen contributes much to longevity, as ſome people ſay of Guldbrandal, eſpecially Leſſoe-Gield through which there is a continual draught of fine freſh air; ſo that thoſe aged people who are tired of life, retire to ſome other place where the air is leſs ſalutary, in order to get rid of the life of which they are weary.

Hans Aaſen, who firſt erected copper-works at Roraas, where his picture is to be ſeen in the church, died in 1683, aged a hundred and ſixteen, according to the Rev. Mr. Abildgaard's jubilee-ſermon, p. 37. In M. Wieland's monthly intelligence, for the year 1722, p. 55, it is ſaid, that a peaſant's wife near Stavanger, whoſe name was Liſbet Walevand, died in the hundred and thirty ſeventh year of her age, and left behind a huſband aged a hundred and ten. The ſame author ſays, that in the year 1725, a peaſant's wife at Narſen, in the dioceſe of Tronhiem, died at a hundred and twelve, and had her ſenſes and memory perfect to the laſt. He likewiſe adds, that in the year 1728, p. 88. a woman aged a hundred and twenty-ſeven, died in the pariſh of Roſdal, but does not mention her name, ſhe was married in the ſixty-ſixth year of her age, and lived in wedlock fifty-five years, and after that was ſix years a widow. Chriſtian Drakenberg a Norvegian, famous

mous for his great age, who, I preſume is ſtill living at Copenhagen, kept his wedding at the houſe of his Excellency count Daune Schiold about fifteen years ago, and then he was ſaid to be a hundred and thirteen years old; ſo that he muſt now be about a hundred and thirty. His picture has had the honour a long time ſince to be put up in the Royal Muſeum. I cannot ſay how far that ancient pair are advanced in their years of which Mr. Wieland, quoted above, gives an account in p. 88. ad ann. 1727. He ſays, that the huſband, by name Hans Nanſen, was then ninety ſeven, and his wife Maria Mads was a hundred and one years old; that they had then lived ſeventy years together in wedlock, at a place called Steens-gaard, in the county of Jartſberg; that they both enjoyed a very good ſtate of health, and that the old man could do the work of a labourer. In the year 1735, Nans Gaſmand, a labourer at Eegelands iron-works, died, being a hundred and nineteen years old; at a hundred and two he married a ſecond wife, and was ſo vigorous that he could walk from Eegeland to the town of Dramen, which is about twenty Norway, or a hundred and twenty Engliſh miles. Wieland Relat. ad hu. ann. p. 7. But there is ſtill a more extraordinary inſtance, an account of which was delivered into the Royal Chancery in the year 1737, by his excellency de Witth, relating to a farmer of that province by name Knud Knudſen, who, in the year 1705, and in the eighty-firſt of his age, married his deceaſed wife's ſiſter, Ingri Tallach's daughter, who was then thirty-nine years old, and were both ſentenced to death for the inceſt committed. Upon this they fled to the mountains and hid themſelves thirty years in the woods, living like hermits, or rather like wild beaſts upon what they could catch by hunting, &c. They continued in this ſolitary place till the woman was ſeventy years old, and the man a hundred and eleven, and perhaps would have liv'd ſome years longer, if the miniſter, whom he ſollicited to adminiſter the holy ſacrament to him, had not out of an indiſcreet zeal, delivered this extraordinary couple up to the hands of juſtice, and put them into a priſon; where the poor old man could not ſurvive the return of the king's pardon, and the woman was obliged to do penance publicly in the church. There is another moſt remarkable account, and perhaps, ſo extraordinary an inſtance is not to be met with in the hiſtory of any country, which I have from undoubted authority, and

An extraordinary incident.

and therefore cannot leave this ſubject without inſerting it. In the year 1733, when his late majeſty Chriſtian VI. and his royal conſort Sophia Magdalena, viſited their Norvegian dominions, they took up their reſidence in the houſe of lieutenant-colonel Colbiornſen in Friderickſhald, who was deſirous of diverting his royal gueſts with what they call a jubilee-wedding. This was performed in the garden under tents pitched for that purpoſe.

An extraordinary jubilee-wedding.

There were four couples married, being country-people invited from the adjacent parts, and out of all theſe there were none under a hundred years old; ſo that all their ages put together made upwards of eight hundred years. Their names were, Ole Torreſen Sologſteen, who lived eight years afterwards, and his wife Helje, ten years; Jem Oer who lived ſix years after, and his wife Inger who lived ſeven years; Ole Beſſeber and his wife N---, and Hans Torlaſkſen who lived ten years after, and brought with him Joran Gallen who was not his wife, but being a hundred years old, he borrowed her for this ceremony; ſhe alſo lived ten years afterwards. Theſe eight married people, being each upwards of a hundred years old, made themſelves extremely merry at this jubilee-wedding, and the women, according to the cuſtom of the country, danced with green wreaths on their heads, which brides always wear on their wedding-day.

The royal family and nobility were preſent to ſee this extraordinary ball, which without doubt, was as innocent a one as ever was exhibited. They had each a genteel bride-preſent given them to carry home. I thought myſelf in a manner obliged to take notice of this uncommon entertainment, as it has not, as far as I can learn, hitherto been remarked by any writer. The Scots, who partly breathe the ſame air with us, have alſo amongſt them a great many examples of perſons of an uncommon great age. Dr. Bab. Sibbald tells us in his Prodom. Hiſt. Nat. Scotiæ, p. 44. and lib. iii. p. 4. of a man whoſe name was Lawrence, that married a ſecond time in the hundredth year of his age, could row out in his boat to fiſh till he was a hundred and forty, and died at laſt worn out with age, without the leaſt ſymptoms of any diſtemper. Amongſt the Swedes, who are our neighbours on the other ſide, and likewiſe breathe the ſame air, are found ſtill more extraordinary inſtances, of perſons living to a hundred and fifty-ſix and a hundred and ſixty-one years; of this, as well as of the fruitfulneſs of the

Norwegian-women, Mr. Buffon's words concerning Olaus Rudbeck's account are as follows: "In Sweden the women are very fruitful: Rudbeck ſays that they have frequently eight, ten, or twelve children; and it is not at all ſtrange that ſome women ſhould have eighteen, twenty, twenty-four, or even thirty children. Rudbeck ſays farther, that there are men who live to be upwards of 100 years old, and ſome to 140; and that there were two in particular, one of which arrived at 156, and the other at 160 years of age. But it is true that this writer is a little enthuſiaſtic in the praiſes of his own country, (Il eſt vray que cet auteur eſt un enthuſiaſte au ſujet de ſa patrée) and according to his repreſentation, Sweden muſt in all reſpects be the fineſt country in the world," &c. Buffon. Hiſtoire Nat. Tom. iii. p. 172.

## SECT. IX.

Health affected by different airs.

Though Norway, like Sweden, is in general a very healthful country, yet it is not exempted from its peculiar diſeaſes; eſpecially the inhabitants of the dioceſe of Bergen, along the ſea-ſide, and on the weſt-ſide of File-field. The air in theſe parts is not very ſalubrious, and differs very much from that of the eaſtern and ſouthern parts of Norway; for on the other ſide of that long chain of mountains, which I have taken notice of before, they have both in winter and ſummer a fine clear ſky, with as dry and healthful an air as in any part of Europe. In this province the air is generally damp, thick, and foggy; and tho' it cauſes milder winters, it is not ſo healthful as a thinner air. This appears by the effect it has on our peaſants, when they come here from other parts of the country; for they ſeem as if they were entirely out of their element, and can hardly breathe in it; nor does it agree with their health. This muſt be attributed to the great weſtern-ocean, that extends from America to Norway, from the ſurface of which a vaſt quantity of damps, or particles of water, are daily evaporated. Theſe are driven by the ſoutherly, weſterly, or north-weſt winds to our coaſt, without meeting with any obſtruction, till at laſt they ſtrike againſt the high chain of mountains mentioned above, which are ninety-ſix Engliſh-miles eaſt of Bergen. There they meet with reſiſtance, and being condenſed, their gravity prevents them from riſing above the tops of the mountains to go farther, and they cannot get back except they meet with

an eaſt or north-wind. On the other ſide of thoſe mountains they are quite free from theſe damps and fogs. File-field is like a bank to keep back all thoſe moiſt vapours that come from the ſea, and prevents their loading the atmoſphere, till they fall in immoderate rains, as they do here in the ſummer; for it is ſeldom known to rain in thoſe parts but in ſpring or autumn.

Amongſt all the trading-towns in Norway, Chriſtianſand is reckoned the moſt healthful. The truly learned and Rev. Mr. Jens Chriſtian Spidberg, dean of that dioceſe, gives me in his letter of May 12, 1751, this reaſon for it: He obſerves that Chriſtianſand lies in a more moderate climate than moſt of our other towns; that the horizon is free all round, and cleared by the winds from every quarter; ſo that thick fogs and heavy rains do not laſt long there. The ground it ſtands upon is a dry ſandy ſoil, twenty or twenty-five feet deep, ſo that the rain is ſoon dried up; for which reaſon epidemic diſeaſes are ſeldom known there, or diſappear and are ſtopt by the change of the ſeaſon. Hence the inhabitants of that city live to be very old, often to eighty, ninety, and ſometimes even to an hundred years of age.

Various diſeaſes.

Among the diſeaſes which moſtly appear in the dioceſe of Bergen, which is the moſt unhealthful ſpot in all Norway, I ſhall firſt take notice of a kind of ſcab or itch. This is chiefly found amongſt thoſe that live along the coaſt, occaſioned probably by eating great quantities of fat fiſh, and eſpecially the liver of the cod. This is properly a Scabies-Scorbutica, which may be called a leproſy, but not ſo infectious as the Oriental Lepra; for married people live together many years, and the healthy is not infected, tho' the other party has it. But if they have children, they ſometimes take the infection, tho' not always. This diſtemper generally lies in the blood a long time before any eruption appears; at laſt it breaks out in ugly boils on the face: they are then generally ſent to hoſpitals erected for that purpoſe, of which there is one at Bergen, and another at Molde in Romſdalen. Our phyſicians are of opinion that this diſeaſe may be cured in young people; but tho' they have often attempted it, I do not find that any one has been thoroughly cured, without ſome remains of the diſtemper. This may be ſaid, however, that when they get tollerably well, they do not confine themſelves to the regimen that

Leproſy. is preſcribed them ſo punctually as is required *. What Mr. Luke Debes obſerves in his deſcription of Faroe, p. 283, ought to have a place here, concerning the northern-leproſy, which in the dioceſe of Bergen, is found to be of the ſame kind and quality as that on the oppoſite coaſt of Faroe. His deſcription of this diſtemper is as follows. "The phyſicians ſay there are three ſorts of leproſies; namely, Tyria ſo called from the ſerpent Tyro. The ſkin of the perſon infected with this kind of leproſy is ſoft, and full of ſpots like warts, and ſometimes peels off in ſcales.

The ſecond ſort is called Alopecia, from the hair turning foxy, and then falling off. Perſons afflicted with this are red-faced, and ſhed their beards and eye-brows.

The third ſort is called Elephantia; the ſkin of a perſon infected with this ſort reſembles that of an elephant; and the face, with every part of the body, is full of tubercles.

The leproſy that this country is moſt ſubject to is the elephantia. For the leprous perſons here are full of livid tubercles, which ſometimes break out into boils, and diſfigures their faces extremely. They are hoarſe, or ſpeak through the noſe; but the diſtemper is more virulent at ſpring and fall, and carries off a great many. What chiefly occaſions this diſeaſe is the quality of the air, and the diet of the inhabitants; for, as I have intimated before, the cold is not immoderate here, but we have a very damp air. This, in general, produces the ſcurvy, which is a ſpecies of leproſy, eſpecially in thoſe who do not uſe much exerciſe. Beſides the air, their food, eſpecially of the poorer ſort, which conſiſts of meat and fiſh half rotten, in the winter, and freſh fiſh without any ſalt, and milk, in the ſummer, contri-

* In the north of Holland the damp air, and their daily-nouriſhment, which is chiefly fiſh, have the ſame effect, and I am informed that the ſame ſort of Scabies-Scorbutica likewiſe appears amongſt the common people there, which ſeems to be confirmed by the following teſtimony: "We are now in North-Holland, and I have never ſeen amongſt ſo few people, ſo many infected with the leproſy as here. They ſay the reaſon is becauſe they eat ſo much fiſh". James Howell's Familiar Letters, Part I. Book II. N° xiii. p. 151, Dr. Ruſſel publiſhed a piece in the London-Magazine of June 1752, p. 278, wherein he ſays, "That common ſea-water, applied both internally and externally, will cure not only the ſcurvy, but the above-mentioned leproſy, if it has not taken too deep root, and the glands are ſtill preſerved." And in the ſame place he adds, "That there is a kind of ſea-weed, called Quercus-Manna (of which there is enough here) which is good for the ſcurvy in the gums, if rubbed with it." If it be ſo, then God's providence ſhews itſelf remarkably by diſtributing ſuch univerſal remedies, according to the wants of each nation. Concerning the Norwegian ſea-weeds, I have given all the account I can, in the firſt part of this work.

butes,

butes, in a great meaſure, to this diſtemper. Such diet, eſpecially in thoſe who are not of a ſtrong conſtitution, muſt gradually corrupt the blood, and then the diſeaſe diffuſes itſelf through the body, till at laſt it appears externally. This diſtemper may be communicated to others, for it is infectious; and as it lies a long while in the blood before it breaks out, ſeveral perſons marry, and think they are both free from it; but at laſt one of the parties appears to be leprous.

It is ſomewhat ſurpriſing, and ſhews the care of providence, that children do not always inherit this diſtemper from their parents. I have known three inſtances, where women have been infected with theſe leproſies, and have had ſeveral children, moſt of which are now married, and have not yet diſcovered any ſymptoms of it. For this reaſon, the inhabitants, when they chooſe a wife, give themſelves no concern whether her parents are leprous or not. I have likewiſe known inſtances where the father has been leprous, and the children quite free from that diſtemper. It often happens, that when a married couple have lived together ſome time, and the parties find that one of them is infected, they will ſtill cohabit together, ſo long as it does not appear externally, till they are ſeparated by orders from the government. However, the party that was healthy, remains uninfected; and yet ſometimes a perſon may be infected by a very ſlight contact of a leprous perſon.

On the other hand, there are inſtances of poor miſerable wretches who are quite free from the leproſy, but being deſtitute, are therefore put into theſe hoſpitals amongſt the leprous patients, where they eat, drink, and daily converſe with them, and ſtill remain uninfected all their lives." So far Mr. Debes.

The ordinary ſcurvy would prevail in this country a great deal more, if it was not for hard work, which is the beſt preſervative againſt it, and keeps the juices in conſtant circulation. Hence thoſe that uſe but little exerciſe, and have a good appetite, ſeldom or never eſcape this diſtemper. Nature has ordained ſeveral berries and roots in this country, which are excellent antiſcorbutics, eſpecially cochlearia, or ſcurvy-graſs. Some eat this herb raw, others make a decoction of it with milk; and in Nordland, Scurvy.

where it grows very ſtrong, and is called erichs-græs, they uſe it as a pickle in the winter *.

Catarrh. Catarrhs, and other diſtempers which affect the head and breaſt, and are called here kov and kriim, appear very frequent along the coaſt in the ſpring. Thoſe that don't come out into the air every day, and therefore are the ſooneſt ſenſible of the cold, are moſt afflicted with theſe phlegmatic diſorders; but the expectoration cauſed by this kov is generally ſerviceable to the conſtitution.

The common people, who are the leaſt troubled with this diſtemper, drink ſour whey as warm as they can bear it, by way of remedy or preſervative, which cuts and attenuates the viſcid obſtructing phlegm, and promotes the diſcharge of it.

Landfarſoct is the name the peaſants give a certain fever, which, however, comes but ſeldom; it is contagious and epidemic, from whence it has its name. Mr. Luke Debes, in his deſcription of Faroe, compares it to the diſtemper which the ſoldiers are apt to catch when they are encamped in damp places. It is malignant and painful, and carries off great numbers, and thoſe that ſurvive are cured by God's bleſſing, and the ſtrength of conſtitution, for we know of no remedy for it.

Allevilde. Allevilde is the name of a diſeaſe, which ſeizes the patient at firſt with violent ſhooting pains, which move about from one part of the body to another, like the arthritis vaga, and often breaks out into ſores and ulcers. The ſuperſtitious peaſants aſcribe this to a ſort of blaſt which comes from the ſea, or out of the earth or mountains, which according to their opinion, is cauſed by witchcraft, and the remedy they make uſe of, is as abſurd as the imaginary cauſe of the diſtemper. But thoſe that are wiſer, uſe tar-water, or the oil extracted from the raw liver of fiſh, and apply it both internally and externally.

Begavning. Begavning, is the name of a kind of epileptic diſeaſe, but ſeldom ſo violent as in other countries. The women are moſt ſubject to it here in Bergen, from a ſuppreſſion of the menſes, occaſioned by the dampneſs of the air. Some pretend to ſay that

* On Hitland, God's providence has provided them with the ſame remedies againſt this diſeaſe which is contracted there, by the ſame manner of living, for they eat ſo much ſalt-fiſh that they are very ſubject to the ſcurvy. Nature has furniſhed them with plenty of ſcurvy-graſs; they have no phyſicians or ſurgeons, neither have they any occaſion for them. London Magazine for June 1752, p. 276.

it is occaſioned by the eider-down beds they lie upon; but Th. Bartholinus in his medicina Danor. domeſt. par. 65, is not of that opinion, as I have before obſerved, in the deſcription of the eider-bird.

In the eaſt-country, or on the otherſide of File-field, they hardly know any thing of the diſeaſes, which are common here along the coaſt. The air in thoſe parts, as has been obſerved before, is much purer, drier, and lighter, and as healthful as in any part of Europe. The long and deep valleys are like ventitilators, or channels, thro' which the wind, as it were, runs in a current from one end or the other, and keeps the air always freſh and in motion. The mountains or high grounds, are remarkable for the ſalubrity of the air, for moſt people die of old age there, without ever having experienced what it is to be ſick.

In the laſt century, however, this fine healthy air was twice infected with a plague; eſpecially in 1630, when the new city of Chriſtiania, loſt 3000 inhabitants.

In 1684, the ſame contageous diſtemper appeared afreſh, but did not rage ſo far about, becauſe they burnt ſeveral woods, and the heat and ſmoak occaſioned by thoſe fires, diſperſed and purified the infected air. What the reverend Mr. Spidberg obſerves, in the letter quoted above, is very remarkable, namely, that when the plague raged here, it did not affect Roraas, Quikne, or Meldal's copperworks; for the poiſonous and infectious effluvia, were corrected by the ſtrong ſulphureous ſmoak and vapours, that incorporated with the air, for twelve or fifteen Engliſh miles round thoſe copper works. But diſorders of the lungs and conſumptions are more frequent there, than in theſe weſtern parts, cauſed probably, by the ſame ſulphureous vapours, and perſons afflicted with thoſe diſorders, finds themſelves much relieved by the damp air, which affects weak lungs leſs, than that which is clearer; for a dry, keen air, is too penetrating and ſubtle for them.

If the rickets, called here the Engliſh ſickneſs, with which children in other countries are much afflicted, be derived from a damp and foggy air, according to Mr. Daubenton's opinion *;

* Il n'y a que deux cent ans, que cette maladie eſt connuë; elle a commencé en Angleterre, & de là elle a paſſé en France, en Hollande, en Allemagne, &c. Des célébres médecins ont cru, que le rachitis pouvoit etre cauſé par un air froid & nebuleux, chargé de vapeurs & d'exhalaiſons, &c. Hiſt. nat. tome iii. p. 56.

then one would imagine, that it muſt be very frequent here in Bergen, which is contrary to experience. For this diſtemper is unknown here; and we can ſay the ſame of agues or tertian and quartan fevers, which we know only by report from other countries. The ſmall-pox, which annually rages in Denmark, comes amongſt us about once in ſeven years, and farther north, in the dioceſe of Tronhiem, every tenth or twelfth year; but in the manors of Nordland, perhaps it ſeldom appears above once in ſixteen years, and then makes great havock amongſt both young and old. The laſt time that the ſmall-pox raged in theſe parts, which was in the year 1749, it ſwept away in the city of Bergen alone, 528 perſons, moſt of them young.

## CHAP. X.

### A continuation of the former, concerning the Norwegian nation.

SECT. I. *The food or diet of the Norwegians.* SECT. II. *Apparel.* SECT. III. *Habitations and manner of building.* SECT. IV. *Various ranks and occupations.* SECT. V. *The Norwegian nobility, both ancient and modern.* SECT. VI. *Some thoughts concerning the Norwegian freeholders, &c.*

### SECT. I.

NEXT to the complexion and diſpoſition of the Norwegians, and the account of the various diſeaſes to which they are ſubject, it is natural to give ſome account of their food or diet, their houſes and manner of living.

The Norwegians food in the towns.

In the firſt article, namely, diet, there is a great difference betwixt thoſe who live in the country, and the inhabitants of the trading towns; a great part of theſe conſiſt of Danes, Germans, Dutch and Engliſh, who make their bread, and dreſs moſt of their victuals in the Daniſh faſhion. They may have almoſt all ſorts of proviſions here in perfection, excepting butchers meat, which is not ſo plentiful in Norway, as it is in Denmark. As for wild-fowl, and all ſorts of game, as alſo fiſh of all kinds, except carp, we have them as good, and in as great abundance as in any country in Europe. It is obſerved, that when any foreigners come to Norway, they are ſurpriſed to ſee heaps of oyſter and lobſter-ſhells lying at the doors of poor little huts, and conclude

that people of ſome fortune muſt live there. The milk of our cattle is very good and rich; and as for all ſorts of wines, ſpices, &c. greater quantities of theſe are imported than there is occaſion for, or good œconomy requires, of which I could ſay a great deal, if my intention were to moraliſe in a natural hiſtory. Be this as it will, moſt of our merchants live in a more elegant manner than the nobleſſe in other countries. All kinds of wines (which I mention as a proof of this) are ſo common in Norway, that it may be queſtioned whether there is not more conſumed here in private families than even in the wine-countries. This makes it appear the more extraordinary, that pope Innocent VIII. in the year 1490, diſpenſed with the Norwegian Church from uſing wine in the ſacrament, and allowed them to uſe mead inſtead of it. It was pretended that wine would not keep, but turned ſour and was ſpoiled by the ſevere froſt, though, in all probability, it was then not colder than at this preſent time, and we can preſerve wine here now, as well as in any climate. This remarkable fact is denied by Bzovius in contin. annalium, N° 39, p. 329, but on this ſlight foundation, that the pope (which is very true) had not power to grant ſuch a diſpenſation. "Falſum eſt, eum aliquod tale diſpenſaſſe, cum ſummus pontifex aliquid circa integritatem ſacrificii immutare non poſſit." This concluſion drawn, à jure ad factum, might make one doubt whether the prieſts in the Roman church do receive the cup alone, and deny it to the reſt of the congregation. But we may more ſafely depend upon what Volateranus writes on the occaſion, in commentar. Urban. lib. viii. where he ſays, "Norvegiæ Innocentii VIII. conceſſione permiſſum, ſine vino calicem ſacrificare, quod immenſo frigore vinum in illa regione importatum acceſcat. Cujus rei gratia legatio miſſa." See more relating to this in annal. eccleſ. Dan. tom. ii. lib. vi. cap. i. p. 331.

The peaſant in Norway, as in other places, keeps cloſe to the cuſtoms and manner of living of his forefathers; and as he follows them in other things, ſo does he likewiſe in eating and drinking. Upon this account he enjoys, as has been obſerved, a conſtant ſeries of health, and lives to a good old-age. Bread, which is the chief ſupport of life, is not made of rye, among the peaſants, but upon particular occaſions, as weddings or entertainments, becauſe they ſow but little of that grain, as has been ob- The farmers food.

obſerved before; nor would they chooſe to eat it conſtantly, for the leaven which is always put in rye-bread would not agree with their ſtomachs. This our Norwegian ſoldiers find by experience, when they are commanded to march far from home, and receive the bread (which is provided by the government) that is baked for the regiment; which always purges them pretty ſeverely at firſt.

Flat-brod. Oats, in moſt of the provinces, is the beſt grain, and is larger, whiter, and fuller, here than that of other countries. Of this the peaſant makes his bread, but not in the form of the loaves of rye-bread, which they call ſtumpe-brod, but in flat round cakes, about as big as a ſmall diſh, and extremely thin, this they call flad-brod *. They bake it upon a round iron plate, or a flat ſtone ſet over the fire; they roll out a handful of dough with a rolling-pin, to the extent of the iron plate, and before it is quite enough on one ſide, they turn it with a ſmall ſtick made for that purpoſe. Theſe cakes are ſoon baked, ſo that the baker, who is generally a woman, can diſpatch enough in one day to laſt a whole year; for this ſort of bread will not mould or ſpoil, if kept in a dry place. Some reckon the oldeſt to be beſt; and in former times, ſhe uſed to be eſteemed a good houſewife that ſaved for her ſon's wedding, a piece of bread that ſhe had baked for his chriſtening.

If grain be ſcarce, which generally happens after a ſevere winter, the peaſants are obliged to have recourſe to an old cuſtom, as a diſagreeable, but ſure method of preſerving life. Their bread, in time of ſcarcity, is made thus, they take the bark of the fir-tree, boil it and dry it before the fire, then they grind it to meal and mix a little oatmeal with it; of this mixture, they make a kind of bread, which has a bitterneſs and a reſinous taſte, and does not afford that nouriſhment, that their uſual bread does. However, there are ſome people, that think it is not right to diſuſe this ſort of bread entirely, and even in plentiful years they ſometimes eat a little of it, that they may be prepared againſt a time of ſcarcity, which by the goodneſs of providence, does not happen in a century †.

Our

* In Mingrelia and Georgia, and thoſe parts, juſt ſuch bread is uſed. Ils ont du pain mince comme du papier. Cheval. Chardin, Voyage en Perſe, tome i. p. 186.

† In the province of Bergen, which is the moſt barren, we have the leaſt reaſon to complain of the want of corn; for by the continual trade our merchants carry on to Den-

Our neighbours the Swedes, make the ſame ſhift, even when there is no neceſſity for it. Mr. Peter Hogſtrom, in his deſcription of Lapmark, §. 19. p. 375, ſays, "We know how to make uſe of our fir-trees, even to the ſupport of life, and many a brave fellow, and bold ſoldier, in the weſtern bottom, has been brought up with the fruits of them. Nor is it always out of neceſſity, that they feed on them, but to keep up an ancient and laudable, but now utterly deſpiſed virtue, called frugality. A labourer does not find his ſtrength impaired, by eating bread made of the bark of trees." So far Mr. Hogſtrom, whoſe laſt words give me a good deal of ſurprize, if they are grounded upon ſufficient experience. In the laſt years of ſcarcity in this country, namely, in the years 1743, and 1744, when they were obliged to make uſe of the old expedient, ſeveral made an experiment on the bark of elms; they firſt dryed it, had it ground, and made bread of it. This they found ſweeter, and rather more agreeable to the taſte, than that made of the bark of the fir-tree. Others made uſe of it in another way; they ſoaked it in water, which received a ſweetneſs from it, and became viſcid like the white of an egg, ſo that it might be drawn out ſeveral yards. In this they put ſome oatmeal, and the meal of the fir-tree bark, and kneaded it well; this water binds it together, and renders it more agreeable to the palate. In thoſe parts where the peaſants have large fiſheries, they attempted to mix the row of cod with oatmeal, and knead them together. This made the bread very cloſe, ſoft, and well-taſted, at leaſt to a hungry ſtomach. But I have been informed that it did not agree with ſome of a leſs robuſt conſtitution, and gave them the bloody-flux *.

This bread made of bark, as well as the flad-brod or bake bread in general, Th. Bartholin. ſpeaks of in his med. Dan. domeſt.

Denmark, and other places in the Baltick, they keep their magazines always full, ſo that they can furniſh other countries upon occaſion, and even this year ſeveral thouſand tons of corn have been exported from hence to France and Portugal.

* The Norwegians that live by the ſea-ſide, eat dried ſtock-fiſh inſtead of bread, like the Icelanders and Finlaps. Marc. Paul. Venetus gives us the ſame account of the inhabitants of Aden, a province in Arabia, p. 163. "Fiunt etiam ab incolis panis biſcocti ex piſcibus idque in hunc modum: concidunt piſces minutim atque contundunt in modum farinæ, & poſtea commiſcent & ſubagitant quaſi paſtum panes, atque ad ſolem deſiccari faciunt." Gemelli Careri writes the ſame, in his voyage autour du monde, Tome ii. p. 319, of the inhabitants of the iſland Lundi and Augon in the Perſian gulph. "Ils n'ont de meilleure aliment que des ſardines. Ils les font ſécher au ſoleil, & elles leur tienne lieu de pain, pendant toute l'année."

p. 304, and ſuppoſes that Pliny had ſome knowledge of the laſt. "Ex abietis corticibus in Norvegia panem conficiunt frugum inopia, & in regionibus boreæ frigidioribus ex glandibus, corylo & fago. Placentæ illæ Norvegicæ ex corticibus arborum compactæ ſunt tenuiſſimæ, & longiorem ætatem ferre poſſunt, quàm panis coctus, ſeu buccellatus, quo nautæ in longis itineribus utuntur. Alias placentas pinſunt ex farina hordei & aveneæ quas flad-brod vocant, quaſi panes planos. Plinii Artoptitii creduntur, de quibus." Lib. xviii. C. II.

The peaſants make themſelves a meſs like haſty-pudding, of oatmeal and barley-meal: this they call ſoup, and ſometimes they will boil a pickled-herring in it, or elſe a half-ſalted mackrel, or ſalmon, along with this ſoup. It ſeems they do not chuſe to ſalt any kind of fiſh thoroughly, but rather let it turn ſour firſt. Cod and other fiſh they dry in the air, which is the well-known Berg-fiſh, ſo called either becauſe moſt of it is exported from Bergen, or becauſe it is dried on the rocks by the wind and the ſun.

* They are better provided in Norway with freſh-fiſh than in moſt countries, and up the country in the freſh lakes and rivers, they catch the ſalmon-trout, the Gedder, and other fiſh in abundance. Likewiſe Growſe, partridges, hares, red-deer, rain-deer, &c. and what they cannot carry in the winter to market to the trading-towns, which are ſometimes at a great diſtance, they make uſe of themſelves They kill cows, ſheep, and goats, for their winter-ſtock. They do not pickle and ſmoak all, but cut ſome of it in thin ſlices, ſprinkle it with ſalt, then dry it in the wind, and eat it like hung-beef. This they call Skarke, and it requires a ploughman's ſtomach to digeſt it. They prepare various kinds of cheeſe from the milk, and they alſo boil it to a thick conſiſtency, and call it Moſſe-Brüm, This, according to their opinion, is a great delicacy. But taſte, as well as every thing elſe, is regulated by cuſtom among our peaſants.

They prepare themſelves liquors according to the cuſtom of the country, and at ſet times, namely, againſt Chriſtmas they muſt

* They dreſs a particular diſh, which I believe they uſed formerly in Denmark, from whence the Germans have taken the name of Grütz-koph or Groats-head. This diſh is made of one half groats, or meal, and the other half fat cods livers, well chopped and mixed together; then they fill a cod's head with it, and boil it. This they call Kams-hovet, or Kamperute.

have a ſtock of good ſtrong ale in the houſe, as alſo againſt chriſtenings and entertainments. On other occaſions they regale themſelves with very indifferent ſmall beer, which they call mungat. But their common drink in ſummer is milk and water, and in the winter, water and ſour whey, called ſyre; This the peaſants wives in the ſummer böil, and lay up for the winter *.

> Qua virtus et quanta boni ſi vivere parvo
> Diſcite ---------- Hor.

Here muſt alſo be obſerved, that as cold climates do not admit of ſo much tranſpiration as warmer countries, but keeps the heat in the ſtomach by cloſing up the pores, it conſequently gives the Norvegians a much greater appetite, and a ſtronger digeſtive faculty than common. Our merchants are very ſenſible of the difference cauſed by change of climate with regard to the appetite; for in March, when they fit out their ſhips for the Greenland and Spitſberg voyages, the people require twice as large a ſtock of proviſions as will ſerve the ſame number of men in June or Auguſt, to go to Spain, or up the Straits.

What the Norwegian peaſants, ſeamen, and fiſhermen (next to brandy, which they are all extremely fond of) admire moſt, is tobacco. This weed they not only ſmoak but alſo chew, which they think is as wholſom, and as well-taſted as the Indians do their Betel-areck. The ſmoaking tobacco was firſt introduced into Norway in the year 1616, and then a foot of roll-tobacco was ſold for eighteen-pence. If it could be planted here, and brought to perfection (for our ſummers are warm enough, but perhaps of too ſhort a continuance) it would be a great advantage to the country, and would ſave the nation ſeveral hundred thouſand dollars, that are annually paid for that commodity. However, we ought not to grudge it the ſeamen and the mountaineers, to whom it is a great refreſhment in cold winds and ſevere froſts. Snuff, which they call here Næſe-meel, they are not leſs fond of, and always carry their ſnuff-horn about them. His excellence the Stadtholder Gyldenlove, knew their taſte ſo well in this particular, that in his invaſion on Viig-Sidèro, he diſtributed a certain

* This Syre, becomes at laſt as ſour as vinegar, and is often uſed for that purpoſe; but when they drink it they generally mix a good deal of water with it.

quantity

quantity to every common man; and there is ſtill ſeveral caſks of the ſnuff that was left lying in the magazine at Aggerhuus.

## SECT. II.

Their ancient dreſs.

The Norvegians who live in towns have nothing remarkable or particular in their dreſs; but the peaſants differ pretty much from theſe, as to the faſhion of their garments, and the manner of wearing them. The ancient dreſs uſed in Norway, was without doubt, the ſame as the Fin-laplanders ſtill uſe, conſiſting of ordinary furrs made of the rain-deer's ſkin. The Aſers, or the followers of Othin, that poſſeſſed themſelves of the north, and obliged the old Celto-Scythians either to retire to the mountains, or to conform to their manner of living, introduced another ſort of dreſs, which is deſcribed in Otto Sperling's Commentat. de veteri Danorum veſtitu *. I think their firſt change did not make ſo great an alteration, nor was it ſo ſplendid or ſuperfluous, as that which was introduced in the middle of the eleventh century, in the reign of king Oluf Haraldſen. That monarch founded the city of Bergen, and drew a great concourſe of merchants thither from foreign parts, who brought new faſhions with them; of which, Snoro Sturleſen writes thus in his Norvegian Chronicles, pag. 383. " Then the Norvegians took up many foreign cuſtoms and dreſſes, ſuch as fine laced hoſe, golden plates buckled round their leggs, high-heeled ſhoes ſtitched with ſilk, and covered with tiſſue of gold, jackets that buttoned on the ſide, with ſleeves ten

* Concerning the Norvegians ancient mantle, called joop, Otto Sperling treats at large, in his learned obſervations on archbiſhop Abſolon's teſtament, p. 119, 123. from which I will quote a paſſage, to ſhew, that formerly others took their faſhions from us, as we have ſince done from them. " Quis vero crederet, Danicam vocem joop tot terras peragrâſſe, et tantam gloriam ſui excitare potuiſſe. Bene concludit Menagius, poſtquam in lexico ſuo omnia recenſuit: les Allemans diſent Giupp, pour dire un Juppon, et je crois que c'eſt de ce mot Allemand que l' Italien Giubba a été formé. Unde Germani traxerint ac habuerint hoc nomen et alia plura, nemo hactenus ſolicitus fuit. Ex Dania enim, Norvegia et Suecia nemo credit quicquam proficiſci poſſe quod juvet, cum tamen ad antiquitatem omnem illuſtrandam, hinc fere petenda ſint omnia, ſi quis recte ſapere vult. Uſus eſt illa voce chronici Norvegici ſcriptor in manuſcr. de magno Barfod, rege Norveg. dum ejus armaturam et veſtitum deſcribit, p. 399. (Hann hafdi oc ſilki Hiup rautan y firſkyrto, oc ſkorit fyrer oc a bak med guli ſilki leo. h. e.) Tunicam rubram ſericeam anterius et poſterius leone flavi ſerici ſignatam, ſuper induſio geſtavit. Quod ſatis docet, vocem Joob et Hiup antiquam Danicam et Iſlandicam eſſe. Ita quoque paulò poſt eadem hiſtoria memorat: (Eivindr. hafdi oc ſilki Hiup, med ſama hoetti ſem Konnungr. h. e.) Evindus etiam tunica ſerica, eodem modo quo rex indutus erat." In the tranſlation of the laſt words, I think it is likely, that the good O. Sperling has been miſtaken, da med ſama hætti, may probably be rendered with the ſame hat, eodem pileo, non eodem modo.

feet long, very narrow, and plaited up to the ſhoulders; to theſe dreſſes were added many foreign cuſtoms." By this deſcription may be ſeen how much the Norwegians were inclined to pride and vanity in their dreſs.

After this however, we find that the long garment of the Aſers or the oriental dreſs, was ſtill in uſe, which was not changed for ſhorter, till the reign of the ſon of this king Oluf, about the year 1100. For king Magnus Olufsen was called, Magnus Barefoot, from his introducing ſhort clothes and bare legs. Snorro Sturleſen, in p. 397, gives this account of the affair. "It is ſaid, that king Magnus wore the weſtern dreſs himſelf, and his example was followed by his men, and ſome of his people, who went bare legged, and wore ſhort jackets, for which reaſon, the king was called Magnus Bare-leg, or Bare-foot."

The peaſants here, as in moſt other countries, are the only people that do not trouble themſelves about faſhions and changes of modes. However. they have ſome difference in the cut and make of their jackets and breeches, but that difference is ſo ſmall, that it is hardly perceptible to any but themſelves. Thoſe peaſants, which we call ſtrile-farmers, have this particularity in their dreſs, namely, their breeches and ſtockings are all of a piece, ſomething like thoſe of the Huſſars. They do not wear a jacket with plaits, pockets, and buttons, like thoſe now worn by the Danes, but a wide looſe jacket made of a coarſe woollen-cloth which they call vadmell. Their waiſtcoats are of the ſame, and ſome that will appear finer than ordinary, cover the ſeams, and put a border all round, of the ſame ſort of ſtuff, but of a different colour, which looks like lace, and has a gay appearance. The Hardanger peaſants in particular, are remarkable for wearing black clothes, edged with red, which diſtinguiſhes them from their neighbours. The Vaaſſerne wear all black; and the Strile peaſants wear white edged with black: about Sognefiord, they wear black and yellow, ſo that the inhabitants almoſt of every pariſh in the province, vary in the colour of their clothes. The peaſants dreſs.

The Vademel is a coarſe cloth, which the country people uſe, and is woven in the old faſhioned way, in what they call an opſta-gang. This is a frame, in which the yarn hangs down againſt the wall, with ſtone weights at the end of the warp, to keep it tight, and is done much in the manner of tapeſtry weaving. Inſtead of a Weaving.

ſhuttle made of a reed or cane, they uſe an inſtrument that reſembles a ſabre, made of bone or iron, which they think preferable. This is a ſlower way of weaving, than that practiſed in common, which is called here ror-gang; but then they think that the Vadmel, woven in an opſta-gang, is much cloſer than other cloth, and after it is ſhrunk, it looks as cloſe and ſtrong as a felt. I have taken notice of the herbs and moſs that they uſe to dye with, in another place.

The Norwegians wear a flapped hat, or a little brown, grey, or black cap on their head; this laſt is a ſort of quarter-cap made quite round, and the ſeams are ornamented with black ribbands. They have ſhoes of a peculiar faſhion without heels, or what may be properly called ſoles; they conſiſt of two pieces, namely, the upper leather, which ſits cloſe to the foot, to which the other is joined in a great many plaits and folds. When they travel, and in the winter, they wear a ſort of half-boots, that reach up to the calf of the leg, theſe are laced on one ſide, almoſt like the ancient Roman buſkins. When they travel on the rocks in the ſnow, and find that they ſink in too deep, they put on what they call truviers, which are round like the hoop of a ſmall barrel, work'd croſs with twigs or wicker, and this keeps them up *. But as this way of travelling is troubleſom, when they have a long way to go, they put on ſcates about as broad as the foot, but ſix or eight feet long, and pointed before; they are covered underneath with ſeals-ſkin, ſo that the ſmooth grain of the hair turns backwards towards the heel. With theſe ſnow-ſcates they run about on the ſnow, as well as they can upon the ice, and faſter than any horſe can go, and for which reaſon the corps of ſoldiers, which are called keir-lobere or ſcaters, in times of war, march with great expedition, like the Huſſars.

Open neck and breaſt.

The peaſant never wears a neckcloth, or any thing of that kind, except when he is dreſſed; for his neck and breaſt are always open, and he lets the ſnow beat into his boſom, which he thinks is an ornament. On the contrary, he covers his veins

* Mr. Chardin repreſents, in his voyage en Perſe, tom. i. p. 140, in a print, a Mingrilia peaſant near the Euxine-ſea, with ſuch ſnow-ſhoes, or Norwegian truviers on his feet. By this one may ſee how nature and neceſſity teach the inhabitants of the moſt diſtant countries, in equal circumſtances, the ſame means in providing againſt difficulties. But who knows whether the northern Aſers, Othin's followers, who came from the eaſt, were not driven from thoſe parts.

cloſe

cloſe to keep them warm, binding them round with a woollen fillet, called Vaflunger, which goes ſeveral times round his wriſt, and is ſuppoſed to contribute to their ſtrength. About their body they wear a broad leather-belt, ornamented with convex braſs-plates; to this belt hangs a braſs chain, which holds their toll-knive, or their large knife, gimlet, and other tackle; the name of the whole is ſlire †. Slire.

The women's dreſs I am not ſo well acquainted with, though that has its diſtinctions; and at church, and genteel aſſemblies, they dreſs themſelves in jackets laced cloſe, and have leather-girdles, with ſilver ornaments about them, commonly worth ſixteen or twenty rix-dollars. They alſo wear a ſilver-chain three or four times round the neck, with a gilt medal hanging at the end of it. Their handkerchiefs and caps are almoſt covered with ſmall ſilver, braſs, and tin-plates, buttons, and large rings, ſuch as they wear on their fingers, to which they hang again a parcel of ſmall ones, which look brillant, and make a gingling noiſe when they move. Women's ornaments.

A maiden-bride has her hair platted, and hung as full as poſſible with ſuch kind of trinkets, as alſo her clothes. For this purpoſe they get all the ornaments together that they can, off thoſe belts and buckles, buttons, plates, rings, &c. the more the better, ſo that ſhe makes a groteſque figure, not much to the advantage of her perſon *.

## SECT. III.

What the ancient Norwegians habitations were, and their manner of building, may be ſeen by the Finlaplanders tents or huts, on Kolens mountains, which conſiſt of ſix or eight poles, covered with ſkins or Vadmel. The ancient Germans lived in the ſame ſort of huts, according to Tacitus's account of their manners. They wandered about from place to place, and lived chiefly by hunting, fiſhing, and their cattle. When they had cleared one Habitation and building.

† Such belts and tackle hanging to them, Mr. Chardin, in the place cited above, tells us the inhabitants of Mingrelia uſe. "Les grands ont des ceintures de cuir, larges de quatre doigts, couvertes de plaques d'argent, & chacun attache à la ſienne un coûteau, & la pierre à éguiſer.".

* This kind of dreſſing is called in theſe parts anſti, which ſome ſay is derived from the Agnus Dei in popiſh times, which was their moſt important ornament, eſpecially when it was fetched from Rome, and had the pope's benediction; and then whoever wore a piece of ſilver in the form of a lamb, conſidered it as a ſure amulet againſt all evil ſpirits, &c.

ſpot of ground, ſo that the few families that lived together, could not find any more ſubſiſtance there, they eaſily moved their tents or huts, with all their baggage, to the next place that they found convenient: for the whole country belonged to them and their company, and prior occupation was, amongſt them, the only right and title *.

The Aſiatic colony, that, a little before the birth of Chriſt, over-ran the northern countries, and ſpread themſelves there, built houſes of a more durable kind. For this purpoſe they found plenty of materials in Norway, which now furniſhes other countries with great quantities of timber. However, they did not care to trouble themſelves with hewing of ſtones in order to build walls.

In ſome trading cities, eſpecially at Bergen and Chriſtiana, they have, in this century, begun to build ſtone-houſes; and even in the old times, there were ſome churches built of ſtone, eſpecially of that valuable ſtone called veeg-ſteen, of which Tronhiem cathedral is built. Thoſe churches were formerly an ornament to the north.

Their houſes here, in general, are built of fir and pine-trees, the whole trunks of which are uſed in building, being laid one upon another, and only chopp'd even to make them lie cloſe. At the corners they are joined by mortices, ſo that they can never give way. Theſe trunks are left round as they grew, both inſide and outſide of the houſe, and are frequently boarded over and painted, eſpecially in the trading-towns, which gives them a genteel appearance. Theſe wooden-houſes are counted drier, warmer, and more healthful to live in than ſtone or brick-buildings, but they are in much greater danger of fire; for which reaſon, they have generally vaults in the trading towns, in which they depoſit their valuable effects. The inhabitants of Bergen do not truſt goods of value, which are not in conſtant uſe, in their dwelling-houſes; but keep them in their warehouſes out of the town at Sandvigen.

* Strabo lib. vii. confirms this to be the manner of living of the ancients, even in the middle of Europe. "Commune omnium eſt, qui iſtis in locis degunt, facilis & expedita ſoli mutatio, ob tenuitatem victûs & quod neque colunt agros, neque fructus recondunt: ſed in caſis habitant, ſtructura in unum diem conſtantibus. Cibus eis à peccore plurimus, ut & Nomadibus, quorum etiam imitatione, rebus ſuis in currus poſitis, facile cum peccore abeunt."

In the country-villages, they do not build their houſes adjoining together, but in the manner of a great many towns in Switzerland and Holland, every houſe ſtanding by itſelf, with their fields and grounds about them *; and there are ſome farm-houſes inhabited by one family only, that look like ſmall villages; but they are generally let to three, four, or five families, and frequently conſiſt of ſix, eight, or ten ſeparate apartments, and the ſtavburet, or magazine for all the proviſion, is generally put at a conſiderable diſtance from the dwelling-houſe, for fear of fire. It ſtands very high upon poles, to keep the proviſions dry, and preſerve them from mice and all kind of vermin. The kitchen, where they dreſs their victuals and brew their beer, ſtands alſo ſeparate, as do the barns, hay-loft, cow-houſes, ſtables, and the like. Such a farm has generally a mill belonging to it, ſituated by ſome rivulet, beſides a ſmith's forge; for every farmer, as has been obſerved, is his own ſmith. Up in the country, where timber for building is but of very little value, there is many a farm-houſe as large and handſom as a nobleman's ſeat. The dwelling-houſe frequently is two ſtories high, with a railed balcony in the front; with handſom windows, and the rooms wainſcotted.

It may ſeem ſuperfluous to take notice of the windows, to them that are not acquainted with Norway, for they are new things, and ſeldom ſeen in our peaſants-houſes; for on this ſide of Filefield, in the whole dioceſe of Bergen, where we ſeem more tenacious of ancient cuſtoms, it is rare even among the rich farmers, to ſee what they call a Glar-Stuerne, that is, a dwelling-houſe with windows. If it be aſked how they receive light, I muſt obſerve that there is at the top of the houſe (which is but the height of the room) about the middle, a ſquare-hole about as big as a window, called a Liur, which gives them light. In ſummer, and fine weather, they leave this hole quite open; but in winter, or wet weather, it is ſtopped up with what they call a Siaa. This is a wooden-frame made to fit the Liur, which is covered with an inward membrane (probably the midriff) of ſome animal that is

* At Sundmoer, and other places in this dioceſe, there is to be ſeen ſome lonely houſes on the tops of high mountains, ſurrounded with rugged and ſteep projecting rocks, ſo that there are few caſtles ſo inacceſſible; for there is often but one way to come at them, which is by ſmall ſteps, and here and there ſome wooden pegs, fixed ſo that the aſcent is very dangerous, and few people venture up that are not uſed to them.

very ſtrong and tranſparent as a bladder. This Siaa, is lifted off or put on with a pole, which is reckoned a moſt neceſſary piece of furniture in every farm-houſe. Thoſe that come to a farm-houſe about any important buſineſs, eſpecially courtſhip, muſt lay hold of this pole before they utter a word, according to ancient cuſtom. The ſmoke paſſes through the ſaid Liur, or lighthole, out of thoſe kind of rooms which are called Rog-Stuer, to diſtinguiſh them from the Glar-Stuerne, or houſe with windows. The chimney in the former, as in the farm-houſes in Holſtein, does not go through the cieling, which is arched, and about ſix or eight feet high in the middle; ſo that the ſmoke flies about till it finds a vent at the above-mentioned opening. This cuſtom ſeems to be very hurtful to the eyes; but as the ſmoke meets with no obſtruction, it ſoon riſes ſo high as to be above a man's head, and it is eaſily ſeen how low it falls by the colour of the walls, which are not ſo black in ſuch Rog-Stuerne, or ſmoke-rooms, as in ſome that have chimnies.

Rog-ſtue, or rooms without windows. Glar-ſtue, or rooms with windows.

Even kings have formerly lived in ſuch houſes, nor did they know of any better method till the eleventh century, when king Oluf Kyrre broke that diſagreeable cuſtom of building fire-places in the middle of the rooms, and ordered chimnies and ſtoves to be erected. This muſt be underſtood of his own palace, and at the houſes of perſons of diſtinction; for to this day ſtoves and chimnies are uſed but in few places by the common peaſants in this province. Under the Liuren, or light-hole, generally ſtands a long thick table and benches of the ſame wood. At the upper-end of the table is the Hoy-Sædet, or high-ſeat, which belongs to the maſter of the houſe only, who has alſo a little cupboard for his own uſe, in which he locks up all his valuable things. In towns they cover their houſes with tiles; but in the country they lay over the boards the ſappy bark of birch-trees, which will not decay in many years. They cover this again with turf, three or four inches thick, which keeps the houſe cloſe and warm. Sometimes you may ſee ſervice-trees, and always good graſs growing upon the turf, which induces the goats to leap about, and climb up there for good paſture; and many a farmer mows it, and gets a pretty good load of hay from the top of his houſe *.

SECT.

* As I have before quoted out of Chev. Chardin's Voyage en Perſe, ſeveral examples of the Georgians and the Mingrelians agreeing with the Norwegians in bread,

## SECT. IV.

Their various occupations.

According to the natural order, I muſt now take ſome notice of the trades and occupations of the Norwegians which are theſe following; commerce, mechanic-trades, agriculture, grazing and breeding of cattle, cutting of wood, working in the mines, ſailing, fiſhing, and hunting.

Commerce.

Commerce, or trading with foreign nations, has for many ages been in a flouriſhing condition in Norway, and even before the planting Chriſtianity amongſt us. It was conſtantly encouraged by all our kings, as may be ſeen in ſeveral places in the Norwegian Chronicles; and particularly Snorro Sturleſen ſays, page 89, and king Sagur, page 11, "That when Biorn Haraldſen reigned in Veſtfold, he did not often go to war; but traficked with the merchants that came from various places and countries to Tonſberg. He had merchant-ſhips at ſea which brought him precious jewels and valuable things. Upon this account his brother called him Biorn the merchant." In the following king's reign there is often mention made of merchants from Denmark and Germany, eſpecially at Bergen, which was probably a place of trade long before *.

In the year 1170, king Oluf Kyrre made great regulations at Bergen with regard to trade, and granted great privileges to foreigners, particularly the Engliſh, and Scotch, who for many ages have carry'd on a great trade in this country, and continue it to this day, as do the Dutch, and other trading-nations. I have ſpoken at large in another place of the German hanſe-company, ſo that I need not ſay any thing more of it here †.

bread, habits, eſpecially belts and ſnow-ſhoes. I muſt likewiſe obſerve, that thoſe Aſiatic-mountaineers, have juſt ſuch houſes, Rog-Stuer, and ſky-lights. "Les maiſons ſont bâties de groſſes poutres juſqu'a comble, ce qui eſt fait en terraſſe et couvert de Gaſons. Ils laiſſent une ouverture au milieu, c'eſt par ou la lumiere entre et par où ſort la fumée. On bouche ce trou quand on veut. Ces ſortes de cavernes ont cela de commode, qu'elles ſont plus chaudes en hivèr et fraiches en été, et qu'elles ne ſont ſujettes à être percées par les voleurs."

* I know not otherwiſe what to make of Pliny's words, which ſeem to ſhew that they had a confuſed idea of the northern countries in his time; in Lib. IV. cap. 16. he ſpeaks thus: "Sunt qui etiam alias prodant Scandiam, Dumnam, Bergos, maximamque omnium Norigon, ex qua in Thulen navigaretur. A Thule unius diei navigatione mare concretum." Here Norway is put after Skaane, Denmark, and Bergen, which laſt the Romans muſt alſo have imagined to be a country.

† Forty or fifty merchant-men deeply laden from different parts of the world come in annually in the ſpring, and about eight hundred ſhips loaded with the produce of the country ſail out of Bergen-harbour, where two or three hundred ſail are ſeen lying at a time.

Produce of the country.

Tronhiem Chriſtiania, and Bragnæs, are the moſt conſiderable trading cities of this kingdom, next to Bergen, whoſe trade is very conſiderable to all parts of Europe, and brings in annually more than 100,000 rixdollars duty on a moderate calculation. The commodities or produce of the country which are exported from Norway, are copper, both wrought and unwrought, Iron caſt into cannon, ſtoves, and pots, or forged into bars, lead, though but in ſmall quantities, maſts, timber, deal-boards, planks, marble, veeg-ſtone, mill-ſtones, ſeyl-ſtones. Variety of fiſh are alſo exported, as cod, herring, ſalmon, ling, flounders, and lobſters; alſo cow-hides, ſea-calf-ſkins, goat-ſkins, ſome dreſſed into corduan leather, various kinds of coarſe and fine furs of bears, loſſer, vielfras, wolves, foxes, beavers, ermins, and martens; eider-down, and other feathers; butter, tallow, train-oil, tar; juniper, and ſeveral other ſorts of berries, and nuts; ſalt, allum, glaſs, vitriol, and pot-aſhes †.

This nation has a genius for trade and navigation, though, as has been obſerved before, their ſplendid manner of living in ſome places is an obſtruction to it. We ſend our youths abroad to Engliſh, French, and Dutch-merchants counting-houſes, to improve themſelves, and learn the languages; as ſome young people come here from the ſame parts for a year or two for that purpoſe.

Mechanic trades.

Mechanic trades are not in any great vogue in Norway, becauſe the peaſant, as I have before obſerved, manufactures every thing himſelf that he has occaſion for, and does not want the aſſiſtance of any profeſſed mechanic. For this reaſon, there are but two cities in the heart of the country, which are Kongſberg, and Roraas: all the reſt are ſituated on the coaſt, becauſe they depend entirely upon trade and commerce; only ſome few mechanics are daily employed in making neceſſary utenſils. All fine and curious works we chooſe to import from England, or Holland, though in thoſe articles we begin to improve, and by degrees find the advantage of it, eſpecially in joiners and cabinet-makers work. Agriculture is carry'd on by the farmers in all the provinces, though not with equal diligence and advantage, according to the difference of the ſoil, as has been ſhewn before, in the chapter of the growth and produce of this country. In the eaſtern provinces,

† All the above-named products of Norway, eſpecially fiſh, metals, and timber, may, upon a well-grounded calculation, amount to three million of rixdollars annually.

particularly at Hedemark, and alſo in the manor of Nordland, there are many farmers that every year ſell ſeveral tuns of corn, of their own growth, not only to their neighbours, but alſo export it to Sweden. But on the contrary, there are found many more that are obliged to buy above half the corn they uſe, eſpecially on the weſt ſide of Norway; there he is counted a good farmer that can ſupply his own family with corn. This in a great meaſure proceeds from the peaſants negligence in many places, who chooſe to work in the woods, or at their fiſheries, rather than employ themſelves in cultivating their lands; but now they begin, more than ever, to improve waſte grounds. Theſe peaceable times occaſion a great increaſe of people, and the ground belonging to one houſe, is often divided into three, four, or five parts, among as many families; which makes theſe new inhabitants ſee the neceſſity of being induſtrious in cultivating the ground in order to ſupport their families. However, in moſt places their induſtry is not ſo great as it might, and ought to be in draining the marſhy grounds, and turning them into good paſture, or arable land, which in other countries has improved many waſte places, and rendered them populous in a ſhort time, according to the words of the poet.

------Steriliſque diu palus aptaque remis,
Vicinas urbes alit et grave ſentit aratrum.

As for the reſt, the Lord of nature has diſtributed various diſſimilar means of living among different nations, that one may have need of the other; and that one country may diſpoſe of its ſuperfluities to another, and import other things which it wants at home. Thus if Norway was to produce a ſufficient quantity ſo as not to want foreign corn, I do not know where Denmark would diſpoſe of its ſuperfluity in that commodity. Grazing, and breeding cattle is the chief part of the farmer's employment, by which he not only ſupplies his own wants, but gets a conſiderable profit by ſending to market their fleſh, ſkins and hides. In the mountains the peaſants make grazing almoſt their only occupation, and, as has been obſerved before, ſend their cattle at a great diſtance to graſs, in ſæters, or fruitful ſpots on the tops of the mountains, or in the ſmall valleys, and along the rivulets that run between the hills. They generally ſend good dogs with them, and women ſervants to look after the cows, to take care of the milk,

Grazing.

milk, and to keep a ſort of dairy, in little huts built for that purpoſe.

That the employment of a ſhepherd has been in eſteem even in theſe later times, may be concluded from Baron Holberg's deſcription of Bergen, p. 133, where he ſays, that Gudleich Offmundarſon, one of the King's ſtewards, in the year 1328, had been one of his Majeſty's ſhepherds before. And Adam Bremenſ. ſays, in his hiſt. eccleſ. pag. 239. "In multis Normanniæ vel Sueciæ locis paſtores pecudum ſunt etiam nobiliſſimi homines, ritu patriarcharum & labore manuum viventes."

Cutting of wood or felling of timber.

Cutting of wood, felling and floating of timber, burning charcoal, extracting tar, and every thing that belongs to the woods, is the principal employment of the peaſants here in Norway. Some do it in their own grounds, but moſt of them are employed in the large woods, at a great diſtance from their place of abode, which belong to the public, and are no one's peculiar property. They have the wood, &c. for their labour, and generally ſtay there for ſeveral weeks together, taking as much proviſion with them as they can carry, or have it ſent after them. When the timber is felled and cut, they are obliged to leave behind a great deal of what they lop off, to rot. They fetch away the large timber in the winter, putting a horſe, or two, or more, to each piece, and drag it over the ſnow to the neareſt river or lake, and in the ſpring the merchants, or their agents, are there to receive it, and to order it to be floated where they think proper. In this work, as well as at the ſaw-mills, and preparing wood for faggots, making ſtaves for caſks, and hoops for the fiſheries, a great number of people are employed, and greater numbers ſtill in burning charcoal. Of this commodity vaſt quantities muſt be delivered at a ſet price to the melting furnaces, namely, at four Daniſh marks, or two ſhillings and eight pence Engliſh per laſt, each laſt conſiſting of twelve tons, and every ton two feet ſquare. The peaſants that live within eighteen Engliſh miles of every melting-houſe, is obliged to furniſh his quota at that price, for it is not left to his option. If this privilege were not granted to the mines, it would be impoſſible to work them.

Out of the roots of the fir-trees, which, after the trees have been cut down, have ſtood ſeveral years in the ground, and imbibed

bibed the fatneſs of the ſoil, they burn for tar. This they do in the open fields, and then they carry it to the towns to be ſold and exported.

Silver, copper, and iron-works, afford a livelihood to many thouſands of people in Norway, (as has been ſhewn in its proper place) for a great number of men are employed, not only in the mines, but at the furnaces and ſtamping-mills. Mines.

About a hundred and fifty years ſince, when they firſt began to open the mines, and work them in earneſt, they were obliged to ſend to Germany for miners; but now the Norwegians know, as well as any people, what belongs to mining *.

Great numbers of the Norwegians are employed in navigation and fiſhing, and maintain themſelves and families by theſe occupations. Several thouſands go annually from this country to the Baltick, England, Holland, France, Spain, and the Mediterranean, eſpecially when any of theſe trading nations are at war; for then the Norwegians get a great deal of money in a little time, by freighting their ſhips with the commodities of other countries, and tranſporting them from place to place. At ſuch times, many a ſailor never returns to his own country, and ſeveral of them acquire a fortune ſufficient to end their days comfortably. Along the coaſts of Norway, a vaſt many get their livelihood by fiſhing, which is the chief employment they have on the weſt ſide of the country. Hence all the peaſants that live near the ſea, are ſo accuſtomed to it from their childhood, that, like amphibious creatures, they cannot live without rowing or dabling about in the water. There a great many ſpend, at leaſt, half their time, and many end their days in that element, of which they are ſo fond. And though their dead bodies are ſeldom found, yet there is a ceremony uſed and a funeral ſermon, which they call gravfæſtelſe, preached on the occaſion. Navigation and Fiſhery.

The ancient and reverend Mr. Erich Leeganger, miniſter in Karſund, has aſſured me, that in one of his annexer, called Udſire, during the time that he has held it, which is fifty years,

* Mr. John Anderſon ſays, in his account of Iceland, ſect. 11. that mines were diſcovered in the northern countries long before any were found in Germany. Vide Locenii antiquit. Suev. Goth. cap. xvii. and it may ſtill be proved, that that art was carried firſt to Germany from hence, (but was practiſed more in Germany) and ſo much improved, that the northern people were afterwards obliged to go to learn of them, and the Swedes have, in moſt things of that nature, naturalized the terms uſed by the German-miners.

there has not died aſhore, above ten grown men; the reſt have been drowned, being moſtly fiſhermen, and pilots, who are obliged to venture out in the greateſt ſtorms, when they hear a ſignal of diſtreſs from a ſhip. In ſeveral of the out-iſlands that are at ſome diſtance from the coaſt, and chiefly inhabited by pilots, the caſe is much the ſame; eſpecially at Lindeſnæs, in the dioceſe of Chriſtianſand *. They ſay, that moſt of the women there, have had five or ſix huſbands, one after another, and people of credit have aſſured me that it is true. They ſay it is occaſioned by the great number of ſhips of all nations (ſometimes ſeveral hundreds in a day) that go up the Baltick, which by endeavouring to avoid the dangerous rocks Jydſke Rev, muſt paſs by Lindeſnæs, ſo that by attempting to ſave theſe ſhips, many a Norwegian pilot has loſt his life, and left a widow behind him. In Nordland and Sundmoer, where the greateſt fiſheries are, ſuch as are perhaps not to be equalled in the world, moſt of the inhabitants get their living from the ſea, and every year a great many loſe their lives there. This often happens by their own raſhneſs and preſumption; for they make a point of honour of outſailing one another, and every one ſtrives to be the firſt that hoiſts ſail. D. Steinkuhl, in his Topographia Norvegicæ, p. 121, ſpeaking of this infatuation, expreſſes himſelf thus, "Many plunge themſelves wilfully into misfortunes, by their raſhneſs and preſumption, as well in boats as in ſhips, by being ſo bold and daring; for they look upon it as a diſgrace to lower their ſails, in the hardeſt gale of wind; and when they are going through a narrow channel, they will not give way, but run foul of, and ſometimes ſink each other." The Norwegians were good ſailors, and uſed to the ſea in very ancient times: they diſcovered the Weſt-Indies ſome hundred years before the Spaniards, and have left behind them a colony ſtill ſubſiſting, as I have ſhown above. If we enquire what expedient they uſed inſtead of the compaſs, the Norwegian chronicles tell us, that it was a raven which they took with them, and let it fly as the Patriarch Noah did; by this

* The reverend Mr. J. Spidberg, who has a great knowledge of his mother country, and its antiquities, obſerves, in one of his letters to me, that Lindeſnæs, which name I rather think is derived from linde-tree, was formerly called Lidas-neſs promontorium afflictionum, from the many damages and ſhipwrecks which the trading-veſſels ſuffered there, as the Portugueze, when they firſt ſailed round Africa, called the cape of Good-hope, cabo de los Tormientes, on account of the dangerous travados, or ſtorms of wind that they obſerved here.

means they discovered when they were near any land; for it is said, the raven always turns itself towards the nearest land *.

In the last place, I shall observe, that huntiug, shooting, and bird-catching, afford some of the inhabitants of Norway, a comfortable livelihood, for every body is at liberty to pursue the game, especially in the mountains, and on the heaths and commons, where every peasant may make use of what arms he pleases, without controll. They are allowed not only to destroy the hurtful beasts, such as bears, goupes, wolves, foxes, vielfras, badgers, wild-cats, martens, ermines, &c. the skins of which alone, reward them well for their trouble; but also the inoffensive creatures, such as the elk-deer, the rein-deer, harts, and hares; and also growse, mountain-cocks, francolins, partridges, &c. which are carried to market in the winter in great quantities in sledges. The best marksmen live in the mountains, and still in some places, use bows, as they did in ancient times, especially to kill those creatures, whose skins are valuable, for they are not damaged by the flat-arrows. But they chiefly make use of fire-arms, and the country-fellows can shoot pretty exactly at a great distance, which qualifies them in time of war, to lie in defiles and to annoy the enemy greatly. In ancient times, hunting and shooting, were the Norwegians chief support, which may be concluded by this particular, they paid their taxes in many places in hides and skins, which gave rise to those words that are still in use in the Norwegian matrikul. In the fragment published by John Spelman, which is supposed to be eight hundred years old, called Pariplus Otheri, it is there illustrated in § 7. "Unusquisque reddit secundum facultates suas; ditissimus communiter reddit quindecim martium pelles, cervorum rangiferorum quinque, ursi unam, ac decem modios plumarum, cum tunica e pellibus ursinis et lutrinis, atque duobus insuper funibus nauticis, quorum uterque sit sexaginta ulnas longus, alter e balænarum, è phocarum alter

Hunting and shooting.

* In this sense, we should not look upon this as a superstitious prognostication by the flight of birds, as some do. "Si autem exorta tempestate navis in altum cogeretur, incertique essent quorsum iter capiendum, aves emittebant, ex quarum volatu de itinere judicium ferebant, easque sequebantur. Exemplum est in Landnama Saga & Edda, mythol. fab. 34. conf. Jon. Rami Ulysses & Othinus unus & idem, cap. ii. p. 71. quod alii ruditati populi tribuunt, ad auguria tamen rectius refert." Bartholin in antiquitat. Dan. lib. ii. cap. ix. p. 476. Joh. Christoph. Cleffelius in antiquitat. Germanor. septentrional. l. 10, § 4. p. 359.

corio confectus," that is, every perſon gives according to his abilities, the richeſt people generally give fifteen ſkins of the martin, five of rein-deer, one bear's ſkin, and ten buſhels of feathers, with a jacket made of bears and otters-ſkin, and two cables, each ſixty ells long, one made of whales-ſkin, the other of the ſkin of ſea-calves.

The taxes which the Finlaplanders, or the mountain Fins pay to the king's receiver conſiſt, to this day, of ſkins. Theſe Finlanders are quite a diſtinct nation from the Norwegians, and they do not only inhabit the north-ſide of the mountains, but likewiſe the ſouth-ſide, and particularly thoſe rocks, that part Sweden and Norway: they alſo live in the woods, and on the barren tops of the mountains. They are good markſmen, and live partly by hunting, and partly by cutting down the woods, clearing the ground, and ſowing rye, from which they are called Rye-Finlanders. They do their country a good deal of damage by this practice, for many fine woods are deſtroyed by them, and the overſeers connive at it for a ſmall bribe. Thoſe that get their living by hunting, do leſs hurt to the community, only that way of life makes their habitations unſettled, and their ſupplies uncertain; and in their diſtreſs they ſometimes of a ſudden fall upon the farmers, and partly by threats, and partly by begging, oblige them to relieve their neceſſities. In time of war they are employed as guides, and ſometimes as ſpies and ſcouts, for they will find a way; or make one, thro' the wildeſt and thickeſt woods, and almoſt impaſſable mountains, and generally a ſhort one. Theſe people ſeem to me to be, in this country, ſomething like the Morlak nation, which wanders about the Dalmatian mountains. They ſeldom forſake the tops of the rocks, and in time of war are very ſerviceable to the Venetians. They live chiefly by hunting; but I don't know whether they are looked upon in as deſpicable a light by the Dalmatians, as the Finlanders are by the Norwegians, who command them like ſlaves, and treat them with ſuch contempt, as in other countries the people do the Jews *. I have already treated of bird-catching, and how it is prac-

* In former times, and before they forſook their original home by the Bothnic gulph, the Fins lived then in contempt and poverty, according to the words of Tacitus de mor. Germanor. "Fennis mira feritas, fœda paupertas, non arma, non æqui, non penates, victui herba, veſtitui pelles, cubile humus. Sola in ſagittis ſpes, quas inopia

practiſed, particularly by the inhabitants of Nordland, at the hazard of their lives, in another place.

## SECT. V.

Having enumerated the employments and occupations of the commonality among the Norwegians, which conſtitutes the bulk of the nation, I ſhall now treat of the nobility of Norway. There are at preſent but few of this claſs left, for which this reaſon may be aſſigned, that a nobleman's eſtate has not the priviledges belonging to the demeſne of the nobility, longer than it is inhabited by the lord in perſon. Formerly the nobility were very powerful here, and conſiſted of dukes, jarler, and herzer, that is, earls and barons *. Their merits and atchievements may be ſeen in the the Norwegian Hird. Skraa, or Hof, ret. cap. vii. & ſeq, Jens Dolmer, who publiſhed this work, which notwithſtanding its antiquity, is very intelligible, ſays in his dedication of it to king Frederic third, "a more magnificent and numerous court was not in thoſe times in any kingdom; then the king with his courtiers and retinue, could receive the unexpected invaſions, and ſecret attacks of his enemies; or meeting them openly in the field, Nobility.

"They bravely conquer'd, or they bravely died."

Thus the valiant king Hagen Adelſteen and his nobleſſe routed the ſons of Erich Blodox. In thoſe days every courtier gave proofs of their fidelity to their king, of courage, valour towards their enemies, good-manners and civility toward their equals, and affability towards their inferiors." So far the ſaid Dolmer.

Though my plan does not require it, yet it may not be thought impertinent or ſuperfluous in this place, to enquire into a ſubject

inopia ferri oſſibus aſperant. Idemque venatus viros pariter ac fæminas alit." The Boygde Fins in Nordland, live ſomething better, and have a more certain livelihood, but ſtill keep up their cuſtoms and language, though they likewiſe talk the Norwegian dialect.

* Concerning the extinction of thoſe titles, Andr. Buſſæus ſays, in notis ad Arii Polyhiſtor Shedas, cap. ii. p. 12. Hic obiter notandum, regem Norvegiæ Haconem A. C. 1308. Comitum, baronumque titulos, intra regnum ſuum abrogâſſe ſolis regum filiis comitibuſque Orcadenſibus eorum uſu permiſſo, teſte Thorm. Torfæo hiſtoria Orcad. lib. ii. ad memoratum annum." The laſt-mentioned author alſo ſpeaks of it in hiſt. Norv. p. iv. l. xvi. c. xii. p. 366, and ſays the king ordered, that all thoſe honorary titles ſhould be changed to a general one, viz. Herre, dicitur circa hæc tempora rex magnus, titulos procerum honorarios immutaſſe: ſatrapas, barones, ac equites, utroſque communi dominorum vocabulo nominibus præfixo appellari jubens.

that is obſcure and little known, I mean the origin of all the ancient and noble families in Norway. I ſhall give an account of theſe, as far as their names and actions are recorded, either in chronicles, ancient writings, patents, &c. I have given myſelf ſome trouble to pick out thoſe, that by ſtrict examination, are found to be what we call Giæv, or good ancient nobility, which are now extinct, or degenerated to peaſants. The names of theſe families are as follow:

Akeleye, Alfsſon, Arildſon, Aſlakſſon, Auſtrat, Baad, Baardſſon, Bakke, Bilt, Bing, Biörnſon, Blik, Bolt, Bos, Brat, Brimſten, Bruſe, Budde, Darre, Doka, Drotning, Dufa, Egilſſon, Endritſſon, Erikſſon, Erlingſſon, Findſſon, Flida, Frille, Gaas, Galde or Galle, Galtung, Giſke or Giſkio, Giordſſon, Green, Griis, Grot, Guldbrandſſon, Gunnarſſon, Gulſko, Gyldenhorn, Hak, Halvorſſon, Haraldſſon, Hierne, Jonſſon, Kakal, Kalis, Kane, Kold, Koppe, Krækidans, Kroko, Krukow, Kyr, Lauden, Lep, Liodhorn, Lior, Medalby, Mok, Nelſſon, Ormſſon, Orning, Otteſſon, Pederſſon, Philipſſon, Plit, Raudi or Röd, Remp, Ro, Sigvortſon, Skaktavel, Skancke, Skialdarbrand, Skreiding, Smör, Staffenſſon, Stenveg, Steiper, Stumpe, Svarte, Söbiörn, Söllerſſon, Teiſt, Tordſſon, Torgerſſon, Torp, Torſtenſſon, Vagakal, Verdal, Vikingſſon, and perhaps many more that I have not been able to find out.

Since the time of Frideric I. when the old Norwegian nobility, according to Huitfeld's account, uſed to be called away, many Daniſh families, on account of civil employments, places in the army, and other occaſions, were ſent to Norway, tho' very few of them are left; and to that claſs belong the following families: Bagger, Benkeſtokker, Bielker, Bilder, Brokenhuſer, Friſer, Holker, Höger, Huitfelder, Jernskægger, Krabber, Krager, Kruſer, Lindenover, Lunger, Lyſtruper, Roſenkrantzer, Seheſteder, Totter, Walkendorfer, Uggeruper. Of the nobility of other countries, eſpecially Germans, French, and Scotch, there are ſome come in, and ſome ſtill reſide there, as Ahnen, Barklay, Butler, Cicignon, Coucheron, Crequi, Cromarti, Ferry, Flemming, Kleinov, Lautzou, Lutzov, Marſchall, Movat, Oſten, Reichwein, Richelieu, Schak, Sincler, Storm, Wedel.

And ſince the ſovereignty of Denmark, ſome Norwegian families, by his majeſty's favour, have been raiſed to the dignity;

and are Adelaer, Blixencrone, Blixenſkiold, Huſmand, Knagenhielm, Lillienpalm, Lillienſkiold, Lövenhielm, Lövenſkiold, Lövenſtierne, Roſencrone, Stockfleth, Svanenhielm, Sundt, Tordenſkiold, Tordenſtierne, not a new title, but received anno 1733. Tönſberg, Wærneſkiold, Weſſel, Ulrichſdal.

As for the firſt-mentioned ancient Norwegian families, ſome of which are ſtill left in different provinces, it is remarkable, that though moſt of them have begun to live like other peaſants, as to dreſs, diet, and appearance, yet they carefully pick up all the intelligence they can get by tradition, &c. of their pedigree, and publiſh it *. This they particularly do at ſome of their funerals; for the whole pedigree is generally traced in their funeral ſermons. And the eſcutcheons are preſerved in ſome of their houſes as a mark of diſtinction. In others, where they have old-faſhioned windows, the panes of glaſs are ſtained with their coats of arms, which is but a frail monument of their nobility. In another place I have obſerved there are many peaſants, that by report are ſaid to be deſcended from noble families, and even ſome from the royal-line, who are careful in marrying their children to their equals in birth and blood †.

## SECT. VI.

Excluſive of theſe foibles, every freeholder in Norway has vanity enough to think himſelf as good as noble by Odel, or right of inheritance. This conſiſts in having, from time immemorial, the Jus primogenituræ united with the Jus reluitionis, or the right of primogeniture and power of redemption, which in this country has always taken place. The right of freeholders.

There are ſeveral peaſants who now inhabit the houſe, which they can make appear their anceſtors poſſeſſed, and inhabited for three or four hundred years before them. According to the Norwegian-law (which in this, and other points, greatly differs

* In the year 1713, when 5000 Norwegian ſoldiers were ſent to Denmark, General Budde, colonel of a Tronheim regiment, told the commanding-officer, M. Huſmand, that in his battallion he had two country-fellows that were deſcended from one of the ancient Norwegian kings. "Their faces (adds he) and mein diſtinguiſh them ſo remarkably that your Excellence can find them out yourſelf." The general tried the experiment, and diſcovered the two fellows amongſt ſeveral hundreds. One of them died a ſerjeant at the ſiege of Stralſund.

† Of the privilege granted the Norwegian nobility by Chriſtian IV. anno 1591, ſee the Daniſh Magazine, Tom. iii. p. 113. and alſo by king Frederic III. anno 1648, ibid. p. 368.

from the Daniſh,) * no odels-gods, or freehold, can be alienated by ſale, or any other way whatſoever from him, that can make it appear, that he has the beſt title to it, by being the right heir, or odels-mand. If he has it not in his power to redeem it, then he muſt declare every tenth year at the ſeſſions, that the want of money is the only reaſon; and if he ſurmounts that difficulty, or, if he, or his heirs, to the ſecond, or third generation be able to redeem it, then he that inhabits it who is only a poſſeſſor pro tempore, muſt turn out directly, and give up the premiſes to the odels-mand †. For this reaſon, they keep a ſtrict account of their pedigree, and formerly about midſummer, every family uſed to meet together and make themſelves merry, and if any of their kindred had deceaſed ſince their laſt meeting, they marked his name in the tal-ſtock provided for that purpoſe. When king Harald Haarfager, in the eleventh century made himſelf ſovereign lord of all Norway, and ſuppreſſed all the petty kings; his power extended likewiſe to the Odels-bonden, and they were obliged to pay him a tax, which was without doubt, the origin of the Odels-ſkat, or taf, which is ſtill impoſed upon them, though king Hagen Adalſteen, afterwards promiſed that it ſhould be taken off. By this we may conclude that they are miſtaken, who think that the odels-right was not inſtituted till the time of the cruſades, and took its riſe, from a certain Norwegian having permiſſion on his return from the holy land, to reclaim his patrimony which was taken from him during his abſence. According to the old law, called odels balken, thirty years poſſeſſion was required to eſtabliſh the Odel's-right; ‡ and then this right could never be forfeited to the crown unleſs by treaſon or felony. This Odels-right is preferable to that of the ſele-eyers, or freeholders in Denmark, not only becauſe it is better ſecured to their families by the right of redemption; but becauſe they poſſeſs it with all the privileges which

* The real ſignification of the word Odel implies real property, according to Joh. Gramm, in his diſſertation upon the word Herremand; "ut ad Adelbonde redeamus, is non alius quam locuples et copioſus colonus aut fundi poſſeſſor. Schefferus autumat ab Adel et Odel oriundum eſſe, quod proprietatem omnimodam, ſcilicet ab Odh proprietas, et All totum omne denotavit, atque Adelbonde eſſe eum qui haberet Odel, hoc eſt proprium et à majoribus per hæreditatem acquiſitum poſſidebat fundum." Vide Acta Societatis, Reg. Hafn. T. ii. p. 270.

† What there is elſe to be obſerved by putting it up, or lengthening the time for redemption, is to be ſeen in Doct. Frid. Chriſt. Sevel inaugural. diſſertatio de prorogatione termini retrahendi bona gentilitia in Norvegia. Written in the year 1749.

‡ The law now requires but twenty years.

a nobleman has in Denmark; for the Norwegians Odelſgaard, or freehold is only ſubject to the crown. Whether this Odels-right be to the advantage, or diſadvantage of the country, is a queſtion that cannot be eaſily reſolved. However, we may ſay of this as of moſt human inſtitutions, which are always imperfect, that it may produce both good and bad conſequences. It has this good effect, that it fixes the peaſant's affections on his native place, with hopes of keeping his little patrimony in his family, and conſequently, improves with pleaſure thoſe poſſeſſions which he looks upon to be ſo ſtrongly ſecured to him. It likewiſe induces many a peaſant's ſon, who ſees the poſſeſſion that muſt one day devolve to him, to keep near at hand, with hopes of enjoying and improving it by his induſtry. On the contrary, when it muſt be ſold to a ſtranger, it never fetches its value; becauſe the buyer poſſeſſes it with a great uncertainty, and does little to improve the ground that cannot properly be call'd his own, according to the words of the poet. Important queſtion.

"Sic vos non vobis nidificatis aves."

However, one very great evil ariſes from this odels-right, namely, many an undutiful and wicked ſon, becauſe he is the eldeſt, and depends on his odels-right, which nothing can affect, behaves extremely ill, not only to a deſerving mother-in-law after the death of his father, but alſo to his own parents. This might certainly be remedied, without infringing the odels-right, where there are younger children of a better diſpoſition, and more deſerving of the inheritance. By this means, great ſins againſt the law of nature might be prevented, if the legiſlature would think fit to ſet proper reſtrictions to the odels-right. But this extends beyond the bounds of my ſubject, which does not allow me to introduce any thing foreign to a Natural Hiſtory. I ſhall therefore willingly leave this point to be diſcuſſed by others, who are more converſant and experienced in thoſe affairs.

*THE END.*

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FINIS.

## ERRATA.

Part I. p. 195. l. 17. for animal read annual. Part II. p. 59. l. 28. dele in. Part II. p. 196. l. 2. for Kraken read Sea Snake. Part II. p. 4. l. 3. for Iſland read Iceland. Part II. p. 40 l. 3. Note, for dumb read mute.

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